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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
Verse of the Week
Add Definitions
Howdy, Podnuh
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Stories of the Week

Two laddybucks started out for a night on the town. At the first cocktail lounge they visited, one fellow flung his first drink right in the face of the waitress.

Immediately he apologized profusely, gave her a $20 bill for a new blouse and hairdo.

"Don't know what made me do it—some sort of uncontrollable impulse."

At the next bar he staged a repeat performance. Again, an "uncontrollable impulse."

"Look, chum," advised his buddy, "you better see a psychiatrist at once."

Drink-slinger agreed.

Month later they met again.

"Did the psychiatrist help you?"

"Sure did. Now I don't feel embarrassed when I fling it."

At the Mayflower hotel in Washington, D. C., veterans of African safaris attended a Big Game Hunters banquet.

No, they didn't serve broiled lion steaks. Roast beef. Cracked one hunter, newly arrived from Zamboonga:

"This is the first meat I've seen coming toward me in weeks that I haven't wanted to hide from."

Verse of the Week

So what if I talk to myself?
The habit may seem absurd,
But name me somebody else
Who hangs on my every word!

—G. S. GALBRAITH

Add Definitions

Successful executive: One who can delegate all the responsibility, shift all the blame, and appropriate all the credit.—*Wall Street Journal.*

Empty: a Niagara Falls hotel dining room at breakfast time.

Howdy, Podnuh

Writes Rudy Lotz of Virginia Smelting Co.:

"We reluctantly got talked into getting a television set. It has been running ever since, as we've been trying to catch up with the state of the nation and

(Concluded on Page 6, Col. 1)

Labor . . . . . .

Sheet Metal Workers Union Members Told To Bargain Collectively with Contractors

WASHINGTON, D. C. — The National Labor Relations Board has ordered Local 49 of the Sheet Metal Workers Association, Albuquerque, N. M., to bargain collectively, upon request, with the New Mexico Sheet Metal Contractors Association, Inc.

An NLRB report said the union was ordered to bargain with respect to wages, hours, and other terms and conditions of employment of all employes of the members of the contractor association, subject to any of the agreements between the association and the union, dated Aug. 14, 1957.

The union was also ordered to:

Cease requesting employes subject to Aug. 14, 1957 contracts, or any other employes, to engage in a strike without first complying with the written notice provisions of the National Labor Relations Act in any case were such compliance is required.

Cease restraining or coercing any employer who is a member of or represented by the association in the selection of the association as a representative for collective bargaining or the adjustment of grievances.

These recommendations had been made to the NLRB last year by Trial Examiner Herman Marx, as reported in the Nov.

(Concluded on Page 21, Col. 1)

* * *

Stop Harassing Burt Co., Says NLRB

WASHINGTON, D. C.—The National Labor Relations Board announced that a trial examiner has recommended that the Sheet Metal Workers' International Association and three of its locals halt a boycott aimed at Burt Mfg. Co. of Akron, Ohio.

The NLRB said Trial Examiner William F. Scharnikow recommends:

1. That the union and its Locals 70 of Akron and 65 of Cleveland "cease inducing the employes of Wooster Sheet Metal Roofing Co., of Mannen & Roth Co., or of any other employer, to engage in a concerted refusal in the course of their employment, to use, handle work upon, or install sheet metal products of Burt Mfg. Co., with the object of forcing or requiring their respective employers to cease using, handling, installing, purchasing, or otherwise dealing in Burt's products, or to cease doing business with Burt."

2. That the union and its Locals 70, 65, and 98 (of Columbus, Ohio) "cease causing or maintaining a boycott of the products of Burt by any employer, by causing such em-

(Concluded on Page 21, Col. 1)

AGC Favors Voluntary Action Instead of Bid Depository Plan

BAL HARBOUR, Fla. — Bid depositories, local bidding practices boards, and responsibility under the single contract system were among subjects discussed in committee reports presented at the recent 40th annual convention of the Associated General Contractors of America.

The first two topics (and others) were covered in the report of the AGC's Subcontracting Procedures Committee. Regarding big depositories the committee's report said:

"After a review and discussion of the bid depositories presently existing in some metropolitan areas, the committee reaffirmed the action approved at the 1952 midyear board meeting that closer and better relationships between general contractors and sub and specialty contractors would solve or correct any questionable local practice easier, and with greater harmony, than to resort to the regulatory procedures associ-

(Concluded on Page 21, Col. 4)

Engineers . . . . . .

Hear How Market Falls Short of Expectations; Noise, Odor Control Called Important

By Frank J. Versagi

MILWAUKEE—Economics to enthalpy. Absorption air conditioning to noise control. With high temperature water systems, psychrometry, and odors thrown in.

Such was the mental diet at the first Institute on Heating, Air Conditioning and Refrigeration held recently at Marquette university here.

During the two-day session, organized and administered by Richard Panlener, director of Industry Relations, eight nationally recognized authorities spoke to more than 40 conferees who later commented enthusiastically on the program.

"Only 50% of new buildings in 1957 had some cooling; only 10% were equipped with year-round conditioning," stated John E. Haines, vice president, Minneapolis-Honeywell Regulator Co.

Speaking on the economic advantages of year-round air conditioning, Haines continued that "four-fifths of those with cooling were inadequately cooled." He insisted that data is now available to prove that air conditioning will pay for itself in tangible as well as intangible ways.

"When we consider improved worker efficiency, increased productivity, high learning rates, better health, it is quite simple to show factories, offices, schools, hospitals cannot afford *not* to have air conditioning."

Haines cited figures drawn from several sources to support his contention.

"We have figures to show that

(Continued on Page 12, Col. 1)

* * *

West Coast Engineers Meeting Prepares To Explore Program for Local 'Merged' Groups

LOS ANGELES—One of the most significant industry engineering meetings ever to be held on the West Coast will take place at the Rodger Young Auditorium here March 13 and 14, in a program originally developed by Region 9 of the American Society of Refrigerating Engineers.

With the merger of ASRE and ASHAE into an American Society of Heating, Refrigerating & Air-Conditioning Engineers, one of the major events of the Los Angeles program will be a "workshop meeting" at 1:45 p.m. Saturday afternoon, March 14. At this workshop there will be discussions of long-range operation and program planning of merger societies with Section and Chapter officers of both societies participating.

National officers of ASHRAE will be present at the meeting. Cecil Boling, current president of the engineering society, will speak at the welcome luncheon at 12:15 p.m. Friday, March 13. Arthur J. Hess, ASHRAE first vice president, will preside at the opening technical session at

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C. B. Coombs Heads York O. E. M., Mobile Sales

YORK, Pa. — C. B. "Chan" Coombs has been appointed sales manager of O.E.M. and mobile products for York Div. of Borg-Warner Corp.

Austin Rising, vice president and director of marketing for York, said that the addition of all original equipment manufacturers to Coombs' previous responsibility as sales manager

(Concluded on Page 21, Col. 2)

Carrier Dividends Will Depend Upon Earnings

SYRACUSE, N. Y.—The trend of future earnings will determine the rate of quarterly dividend payments of Carrier Corp., Cloud Wampler, board chairman, stated at the company's annual meeting here last week.

The management's standpoint, said Wampler, is that no more than 50% of earnings should be paid out in dividends, with the

(Concluded on Page 21, Col. 1)

First 3 Schools Order Pollux BTU Liquid Meters

NEW YORK CITY—The first three American schools to order Pollux B.t.u. liquid meters, making it possible to determine accurately operating costs and efficiency of their heating or cooling systems while in operation, are reported by Air Conditioning Equipment Corp. here, distributor for the meters.

The three schools are the Pewaukee, Wis. high school, the University of Arizona at Tucson, and the Whitewater, Wis. high school.

Through installation of Pollux meters, the operating engineer can take accurate readings at any time during operation of the system. Total B.t.u. consumed or the heat pickup in the cooling system and the tem-

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York Appoints 3 Merchandise Mgrs.

YORK, Pa.—Appointment of three new merchandise managers in the packaged products sales department of York Div., Borg-Warner Corp., has been announced by Robert E. Cassatt, sales manager, packaged products.

S. H. Chandler was promoted from product manager in the products and application engineering department to merchandise manager, refrigeration and ice equipment.

Walter A. Kirchoff, Jr., was promoted from service engineer in the service department to merchandise manager, room air conditioners.

John C. Rose has left the position of product manager in the products and application engineering department to become merchandise manager, residential heating and cooling equipment.

Janitrol Schedules Service Schools

COLUMBUS, Ohio — Service schools for 1959 are now being conducted by Janitrol Heating & Air Conditioning Div., Surface Combustion Corp.

The schedule was announced as follows:

Cooling schools—March 2-6; March 30-April 3; April 20-24; and May 11-15.

Heating schools—Feb. 23-27; March 16-20; April 13-17; and May 4-8.

Advanced cooling schools — March 9-13; April 6-10; April 27-May 1; and May 18-22.

Tuition fee is $25 per person per school.

Howell Electric and Ohio Electric Merge

CLEVELAND — Stockholders of Howell Electric Motors Co., Howell, Mich., and Ohio Electric Mfg. Co. here have approved merger of the firms.

Via an exchange of stock on a share-for-share basis, Howell acquires the assets of Ohio Electric, fractional horsepower motor maker, and its wholly-owned subsidiary, Kingston-Conley, Inc., Plainfield, N. J.

The new company will operate at Howell Electric Motors Co. but will retain Ohio Electric, Kingston-Conley, and Howell trade names. It will have annual sales of about $10 million and employ about 1,000 workers.

Chester Bland, president of the Ohio firm, becomes chief executive officer of the combination. A. C. Flood will continue as Howell president.

Michigan RSES To Hold 10th Annual Convention In Jackson March 13-15

JACKSON, Mich. — The annual convention of the Michigan Association, Refrigeration Service Engineers Society, will be held here Friday, Saturday, and Sunday, March 13, 14, and 15, with the Cascades Chapter of Jackson as host, according to Forrest Holcomb, chairman of the convention committee.

This 10th convention will get under way at the Hayes hotel Friday afternoon, March 13, with registration, a state board meeting, and election of officers. At 4 p.m., R. B. Sangston and J. O. Wright of Du Pont will present suggestions on how to sell air conditioning.

After registration Saturday morning from 8 to 9 o'clock, R. M. Okster of Minneapolis-Honeywell Regulator Co. will discuss air conditioning controls. A coffee break follows and then E. M. Heller of Addison Products Co. will talk on air conditioning electrical components.

Speaking in the afternoon will be Tom Pendergast; R. A. Wilkins, service manager of Acme Industries, Inc.; and Ward Stanley, assistant sales manager, Ranco, Inc.

Pendergast's presentation will be on hermetic test equipment; Wilkins will discuss customer relations and handling complaints; and — after a coffee break — Stanley will talk on what's new in controls.

On Sunday morning, there will be a panel discussion on problems of conferees and a tour of Consumers Power building to inspect the 248-ton Carrier absorption cooling system.

SAVED!

by KRAMER

THERMOBANK COMPRESSOR

your *money!* Kramer's THERMOBANK COMPRESSOR costs less — even less than most so-called "cheap" defrost systems. Many extra components are installed in this package unit, including compressor starter switch, evaporator motor switch, strainer, drier, high and low pressure switches, control box, magnetic starters, sight glass, purge valve, suction vibration eliminator and all service valves.

your *time!* Time saved is money saved. Factory assembled and run-in, THERMOBANK COMPRESSOR is ready to operate. It requires simplest connections between evaporator and compressor package, saving costly installation time. Start-up, control adjustments, and servicing are much easier. Expensive call-backs are eliminated.

your *space!* Uniquely designed, THERMOBANK COMPRESSOR is the only system where the high-side can be installed outdoors; it works in any location in the United States at any time of the year.

THERMOBANK COMPRESSOR FOR OUTDOOR USE

WRITE FOR BULLETIN TC-406

KRAMER TRENTON CO. Trenton 5, N. J.

45 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Emerson Electric Quarter Sets Peacetime Record

ST. LOUIS—Sales of $19.5 million and net earnings of $854,900 by Emerson Electric Mfg. Co. for the quarter ended Dec. 31, the first of its fiscal year, were reported by W. R. Persons, president.

Both sales and earnings were the highest for any quarter in the peacetime history of the company, Persons said. In the same quarter last year sales were $13.9 million and net earnings $413,110.

Sales increase were achieved in all divisions of the company, Persons reported, with sales of the commercial division making the biggest gains.

"The improvement in earnings in the first quarter of the current year is largely due to the increase in volume," he reported, "but profit margin on commercial business has shown further improvement due to the improved efficiency of operation through decentralization."

Persons also commented: "Demand for refrigeration motors was slow this fall, but a pickup is beginning to show and a good season for these motors may develop."

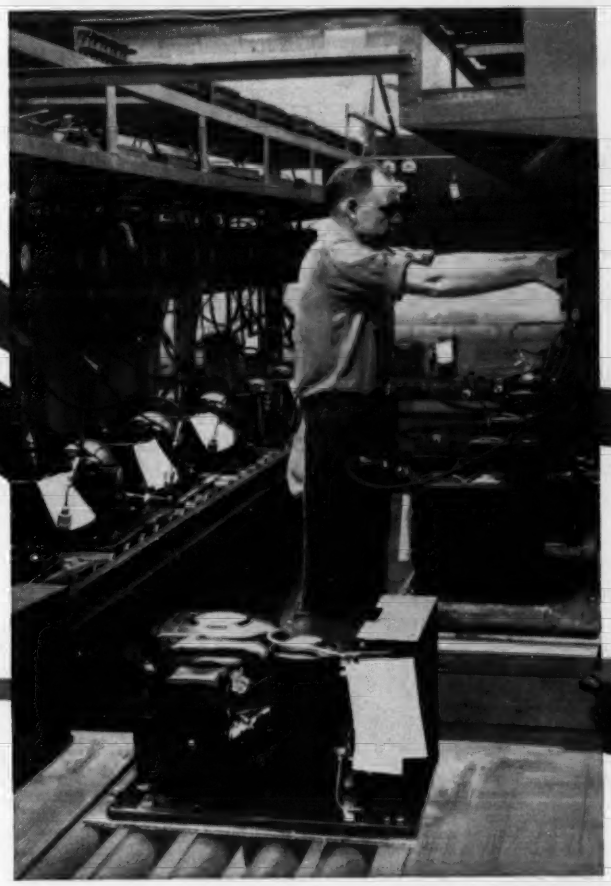
Man's Temperature Lowered to 41° F. At Duke University

DENVER — Duke university surgeons recently described the lowering of a patient's temperature to 41° F.

This was the lowest point to which a patient's temperature had ever been reduced for surgery, according to Dr. W. C. Sealy, head of thoracic surgery at Duke.

The technique employed at Duke calls for forcing, with a special blood-heat exchanger, the patient's body temperature to 50° or more below the normal 98.6°. At such temperatures, the heart stops beating and the body requires almost no oxygen.

The usual range of hypothermia in the past at Duke has been from 82 to 86°, Dr. Sealy pointed out.



The technician shown here is putting a condensing unit through the low-voltage test to make sure it will start and keep running satisfactorily even with a 10% drop-off in the specified voltage. Four additional such tests assure top performance of every Bendix-Westinghouse condensing unit.

WHY BENDIX-WESTINGHOUSE JOB-TAILORED TESTING CUTS LINE REJECTS AS MUCH AS 75%

Exclusive Bendix-Westinghouse test program licks line reject problem on condensing units

There are two ways to test a commercial refrigeration compressor or condensing unit before shipping it to a customer.

One is to plug it in until it "turns over". Time required: *a few seconds.* Information gained about the product's "performability": *practically none.*

The other way—the Bendix-Westinghouse way—is to run the units for sustained periods of time under simulated operating conditions, checking all phases of their operation. During our exclusive five-point test program we check suction pressure and head pressure, low-voltage operation, performance efficiency and other important operating factors. If there is sub-par performance anywhere along the line, that unit isn't shipped. Time required: *at least 30 minutes each.* "Performability" information gained: *plenty!*

Because *only Bendix-Westinghouse* takes the time and trouble to provide the "product insurance" offered by the second method, Bendix-Westinghouse compressors and condensing units have by far the best record in cutting line rejects—by 75% in some instances. Recently, a freezer manufacturer told us he felt our thorough testing program had enabled him to practically eliminate his long-time problem with rejects.

We think this kind of product dependability is well worth the extra trouble—and expense to us—that this exclusive "run-in" testing requires. Your order will enable us to prove it to your satisfaction, too.

Bendix-Westinghouse

EVANSVILLE, INDIANA

A division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio.
Export Sales: Bendix International, 205 E. 42nd Street, New York 17, New York.

Century Electric Names Schaefer, Nafe

ST. LOUIS—Century Electric Co. announced that Langdon C. Schaefer has joined the firm as manager of engineering and that H. George Nafe was appointed manager of the headquarters sales staff.

H. G. Nafe

L. C. Schaefer

Schaefer is in charge of all product design and engineering development at Century. Formerly, he held the position of engineering manager of the Westinghouse small motor division located in Lima, Ohio, the announcement said.

Nafe will be in charge of all headquarter sales operations and will report directly to R. N. Hill, vice president in charge of sales. He joined Century in 1941 and has since served in various capacities, most recently in the sales service section at the company's general office here.

Locker Convention

ELIZABETHTOWN, Pa. — The National Institute of Locker & Freezer Provisioners announced that its 20th annual convention will be held Sept. 13-16 at the Netherland Hilton hotel in Cincinnati.

Hotel Exposition

NEW YORK CITY—The 44th edition of the National Hotel Exposition will be held Nov. 2-6 in the New York City Coliseum, it was announced recently.

Propose Delay In NAPC-MCA Merger

CINCINNATI — The Ohio State Association of Plumbing Contractors has recommended to the board of directors of the National Association of Plumbing Contractors that action on the proposed merger with the Mechanical Contractors Association of America be withheld until the 1960 national convention.

This, the Ohio group said, would allow time for local and state associations to discuss the report of the NAPC Inter-Industry Liaison Committee.

In another action at its convention here, the Ohio group changed its name to the Ohio State Association of Plumbing, Heating & Cooling Contractors to more fully describe the activities of members.

Scotsman To Supply Current Models To Trade Schools for Training

ALBERT LEA, Minn.—Scotsman is launching a new training program to familiarize students of refrigeration and air conditioning with the service of automatic ice making equipment, it was announced by Mel Mathis, Scotsman national service manager, at a recent sales and service meeting.

Under the new program, trade schools accredited by state boards of education or industrial commission are eligible for free Scotsman ice machines to be used in their training program.

All units supplied will be standard models of current production runs, it was stated. Either Scotsman "Super Cubers" or "Super Flakers" will be supplied, and in some cases both types of units.

"Selection of accredited schools to receive units will be made by the Scotsman distributor organization and approved by the Scotsman factory service department," it was explained. "Requests will be made by the individual distributors direct to the factory.

"A questionnaire completed by the school and the distributor will be entered with the distributor's request for a machine or machines. These questionnaires must be correctly and accurately completed by the director of the area trade school involved and signed by an officer of that school along with the Scotsman distributor submitting the request.

"Applications filed incorrectly will not be honored by the Scotsman Service Dept. When the request is approved by the factory, the unit or units will be shipped direct to the school.

"The factory service department and local distributor service organizations will be available to the schools on request, to help instruct and train school personnel and students. With each machine sent, the factory will also send a complete set of ice machine service manuals and service training aids to be used in general classroom work."

All units will be fairly and equitably distributed according to the number of trade schools in a given area, Mathis went on to say.

Don't omit the essential ingredient in selling...

Most prospects need their cash reserves and usual lines of credit for current operation. Make it easier for them to sign on the dotted line by including financing arrangements. COMMERCIAL CREDIT's Refrigeration Plan has become an essential part of the proposal of so many refrigeration and air conditioning companies.

COMMERCIAL CREDIT's Refrigeration Plan is tested by time and experience in handling the financing for thousands of commercial installations. Let us show you how COMMERCIAL CREDIT's experience and know-how can save you time and money . . . and help you close sales with less delay. Telephone the nearest COMMERCIAL CREDIT office or write COMMERCIAL CREDIT CORPORATION, 300 St. Paul Place, Baltimore 2, Md.

COMPLETE YOUR PROPOSAL WITH FINANCING ON THE

COMMERCIAL CREDIT PLAN

BUY ON TIME COMMERCIAL CREDIT PLAN

ANOTHER SERVICE OFFERED BY AFFILIATES OF COMMERCIAL CREDIT CORPORATION

10 Firms Fined In Price Fixing Conspiracy Case

TOLEDO — A Toledo appliance distributor and nine appliance dealers were fined a total of $19,000 in U.S. District Court after they pleaded no defense to a charge of violation of the Sherman Anti-Trust Act.

The distributor and the dealers were indicted last Oct. 20 by a Federal grand jury on charges that they conspired to fixe prices of appliances and also that they prevented other firms in the area from selling General Electric appliances.

The 10 defendants entered the no defense plea Dec. 5.

Judge Frank L. Kloeb said he was convinced the 10 had conspired to fix minimum prices of G-E appliances and that they operated under a plan whereby one of the defendants was disenfranchised for advertising G-E appliances below the fixed price.

The judge pointed out that government counsel said the price-fixing scheme was hatched at a meeting March 20, 1957, but this was denied by attorneys for the distributor.

Fined $10,000 was the Commercial Electric Co., the distributor.

Dealers fined $1,000 each were Frank Rogers Furniture City, Inc., Maumee; S&K Appliances, Inc. (Tiedtke's Annex); Gross Electric Fixture Co., Woodville Appliances, Inc., Lusk Furniture & Appliances, Inc., Shea's, Inc., Lasalle's (R. H. Macy & Co., Inc.), Phillips Appliance & Air Conditioning, and Superior Refrigeration Sales & Service.

Pending against the same defendants is a government civil suit which involves similar charges.

Imperial Brass Names 3 New Vice Presidents

CHICAGO — The Imperial Brass Mfg. Co. has announced the election of three new vice presidents: Gordon J. Duerr, vice president-marketing; Geo. E. Franck, vice president - engineering and research; and Fred W. Winter, vice president - manufacturing.

G. J. Duerr

G. E. Franck

F. W. Winter

W. C. Musham, president, pointed out that all three offices represent newly-created posts in the organization.

Duerr joined the company in 1936 and in recent years has been sales manager of the western division. Franck has been the company's director of engineering and has many patents to his credit on fuel system, hydraulic, and instrumentation components. Winter has been the company's manufacturing manager.

SEND FOR REPRINTS

"ELECTRICAL CHARACTERISTICS OF PACKAGED AIR CONDITIONING UNITS."

Only 25¢ each.

For your copy, clip this ad and mail with name and address to: Air Conditioning, Heating & Refrigeration News. 450 W. Fort, Detroit 26, Mich.

York 'Cavalcade of Products'

YORK'S new hermetic "Turbopak" meets with the approval of Henry M. Haase (left), president of York Div., Borg-Warner Corp., and R. C. Ingersol, Borg-Warner board chairman. The unit is touring the country as a part of York's Cavalcade of Products.

* * *

2 Tractor-Trailers To Visit 15 Cities In Coast-to-Coast Tour

YORK, Pa.—York Corp. is showing off its new air conditioning, refrigerating, and heating equipment nationally via a "Cavalcade of Products" road tour during which two big tractor-trailer units will visit 15 cities from coast to coast.

The trailers are equipped with York products introduced at the recent International Heating & Air Conditioning Exposition in Philadelphia.

Included in the display are a "Turbopak" cooling system, a V/W packaged hermetic water chiller, a V/W hermetic condensing unit, a V/W hermetic compressor unit, a three-pipe "Hi-I" induction unit, lithium bromide absorption system demonstrator, air source heat pump, residential "Comfort Center," furnaces, room air conditioners, automatic ice makers, and several other items.

The "dramatic and informative" show is described as a "public demonstration of how York is Geared to Go In 1959," York personnel are on hand to describe the equipment and answer any questions.

Product presentations are conducted in the morning for consulting engineers, contractors, architects, utility people, plant engineers, bankers, building owners and managers and others. An open house and buffet begins about 1 p.m. and runs into the evening.

The tour got under way Feb. 17 at the Coliseum in New York City and then moved on to Pittsburgh Feb. 24. The remainder of the schedule is as follows:

March 3—Music Hall, Cincinnati; March 5—Norris Bros., Inc., 2138 Davenport St., Cleveland; March 9—Light Guard Armory, Detroit; March 12—Coliseum, Chicago; March 16—St. Louis Arena, St. Louis; March 19—Veterans Memorial Building, Kansas City, Kan.; March 30—Shrine Exposition Hall, Los Angeles.

April 2—Cow Palace, San Francisco; April 9—State Fair Ground, General Exhibits Building, Dallas; April 13—Shamrock Hilton hotel (tent in front of hotel), Houston; April 16-17—Biltmore hotel, Atlanta; April 27-28—Sheraton Park hotel, Washington, D. C.; first week in May—Boston.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Penn Controls Moves Eastern Warehouse

RIDGEFIELD, N. J. — Eastern warehouse facilities of Penn Controls, Inc. have been moved to larger quarters at 1024 Edgewater Ave. here, according to A. W. Barr, eastern regional manager.

The new warehouse operation is managed by Raymond P. Burke under the direction of George Sander, district manager, and James M. Garrett, sales engineer, who transferred the Penn North Bergen office

Airtemp Appoints 3 Regional Managers

DAYTON — Appointment of three regional managers for Airtemp Div., Chrysler Corp., has been announced by Warren Fitch, director of distribution.

They are: E. D. Dickson, central region, headquartered in Dayton; H. P. Young, northeast region, New York City; and G. B. Sharkey, West Coast region, Los Angeles.

Dickson joined Chrysler Airtemp in 1940, and assumed his first regional post in 1950. The central region, for which Dickson assumes responsibility, was only recently set up by Airtemp.

A 12-year veteran with Airtemp, Young joined the firm in 1947 as a field sales representative. Sharkey came to Chrysler as a district representative in 1950, and served as dealer development representative.

Schneider Gets Third Term

BUFFALO—Members of the Greater Buffalo Sheetmetal, Roofing & Air Conditioning Association installed Frank J. Schneider president for his third term.

DAVISON

PA-400

Silica Gel

stops corrosion and freeze-up in seconds

Davison PA-400 in refrigerant gases drops moisture level to less than 10 ppm—effectively prevents water from combining with refrigerant to cause hydrochloric and hydrofluoric acid formation. In fact, if acids have already formed, Davison PA-400 will remove them, too.

Scale, sludge and other foreign matter as small as 1 micron in size are removed by Davison PA-400 full-flow, no by-pass filtration. Combine top dehydration with the finest filtering efficiency—that's Davison PA-400. Write Dept. 2513 for full information.

W.R. GRACE & CO.
DAVISON CHEMICAL DIVISION
BALTIMORE 3, MARYLAND

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

all the entertainment we've missed over all these years.

"To our great relief our fears about the nation's defenses proved unnecessary, as Rin Tin Tin is still alive and on the job. But the West is in a rather rough condition. After all these years, billions collected in gas taxes, there are no roads and automobiles in some great areas of our country.

"And while they still have sheriffs, it seems to us that a bigger proportion of them are honest.

"The badmen still ride horses, hide behind rocks, and can't hit the broad side of a hero at 20 paces with a rifle, but we found the heroes have been hard at work practicing until they no longer need to aim.

"From the ads we've come to the conclusion that the average American must have dirty hair, bad breath, frequent headaches, an upset stomach, sour burps, cramps, a sore bottom, and smells awful. And all the cigarettes, beer, pills, soap, ointments, and cornflakes have yet to cure the first one.

"At least it's a portable set, and one of these days we'll find out how to turn it off."

Do You Follow Us?

Fellow by the name of Ambrose Ryder has worked out a self-finding address method which could revolutionize our postal system.

Mr. Ryder, a retired vice president of Great American Indemnity Co., explains the workings of his system—applicable world-wide—in his book, *Where is Where* (price, $1).

This system is based on measurements of latitude and longitude, divided into "centamins" (1/100 of a minute). It brings real estate measurements down to less than the width of a narrow city lot.

By using his system, Mr. Ryder claims, any spot on the globe may be pinpointed by a series of digits showing its location eastward in relation to the International Date Line and northward in relation to the South Pole.

For example, the complete address of a specific building in Yonkers, N. Y. would be:

57-6652E
78-5538N

These two series of numbers should determine its location within 50 ft. You wouldn't need to write the name of the city, state, or country on an envelope, because no other address in the world can exactly duplicate this one. Something like fingerprints or snowflakes, maybe.

Adoption of this system would mean, of course, that mail could be sorted electronically thus speeding up deliveries substantially.

If you want to know more about Mr. Ryder's system and its other potential advantages, drop him a note. Although he has issued a map based on his system and embracing his hometown and neighboring villages, we don't know what his Ryder-system address is.

Under our present old-fashioned method. it's P. O. Box 384, Carmel, N. Y. Your letter, thus addressed, will no doubt get to Mr. Ryder—although maybe not so fast as with two series of symbols only.

Being in the publishing business—sending out thousands upon thousands of mailed missives every week—this idea intrigues us.

Postmaster General Art Summerfield: Are you listening?

Quotes of the Week

A person with a hundred interests is twice as alive as one with only 50 and four times as alive as the man who has only 25. What are you interested in —food, home, business, clothes, family? If you would be free from nervous tension and live a healthier life, widen your interests, broaden yourself. There is a rich world around you in books, paintings, music, sports, and most important, people—DR. NORMAN VINCENT PEALE.

Whence comes this idea that if what we are doing is fun, it can't be God's will? The God who made giraffes, a baby's fingernails, a puppy's tail, a crook-necked squash, the bob-white's call, and a young girl's giggle has a sense of humor. Make no mistake about that!—CATHERINE MARSHALL, in *Christian Herald.*

If the four-day week ever becomes a reality, then who's going to compensate us for the two coffee-breaks we'll no longer have?—TERRY MCCORMICK.

If you want a place in the sun, you have to expect some blisters.—*Rotator.*

Fearing the future is one of the silliest of our many obsessions. Actually, there is no such thing as a future. There is only the present moment. What should concern us is what is before us now. If we handle the *present* with intelligence, all following moments will benefit by the good thinking we do this instant.—WINSTON CHURCHILL.

Recent Good Reading

Success isn't something that pops up like popcorn in a pan. Most of it is made up of know-how, getting along with others, gumption, and a bull-dog grit which makes a man sink his teeth into his work and keep them there.—VERNON C. JOHNSON.

There is a newly married couple down the block who split up because the husband told his wife she couldn't thaw out dinner as well as mother.—*Indianapolis News.*

The years only slow you down physically. They do not affect your ability to think or to imagine, or to write. On the contrary, you have a wider wisdom to draw on.—COMPTON MACKENZIE.

You must give some time to your fellow man. Even if it's a little thing, do something for those who have need of help, something for which you get no pay but the privilege of doing it.—ALBERT SCHWEITZER.

Music can awaken, deepen, or refine emotions, and thereby can add meaning, depth, and zest to life.

It can provide escape, distraction, and thus serve therapeutic functions. It can satisfy a basic urge for rhythmic experience.

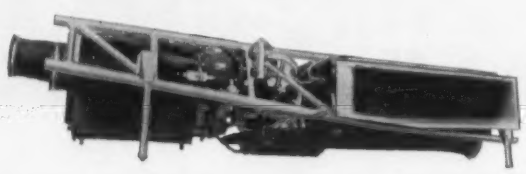
And the claim is made that it can assist in interpreting other times, places, and peoples. —WILLIAM M. LAMERS.

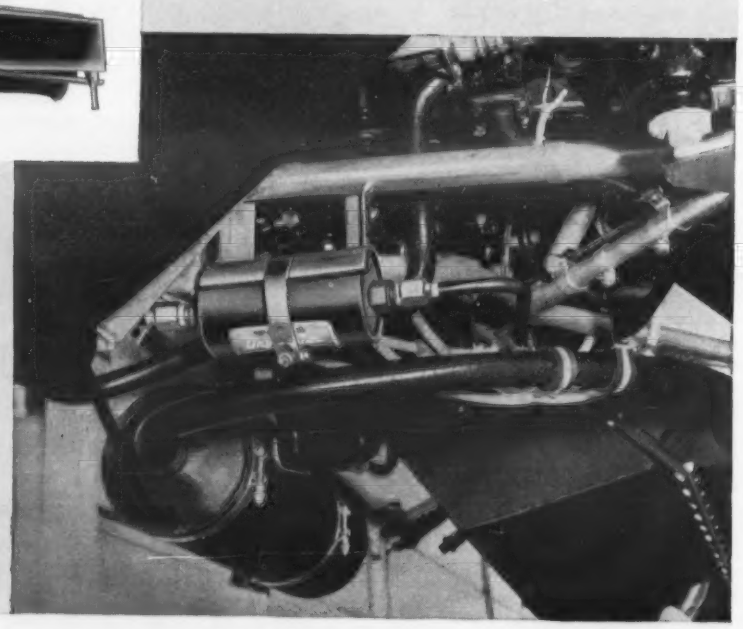
where efficiency and dependability are

Drymaster

America's first jet liner . . . Boeing 707 utilizes dependable Drymaster Filter Driers for air conditioning

Two Drymaster Filter Driers are integral components of the AiResearch Freon system, made by the AiResearch Manufacturing Co., Division of The Garrett Corp. of Los Angeles, California, that supplies 20 tons of cooling for air conditioning in America's first jet liner . . . the Boeing 707. In flight operation, an AiResearch turbocompressor supplies air first to a primary heat exchanger where heat of compression is removed. The air then passes through the Freon evaporator where it is cooled and de-humidified and is then introduced into both cabin and cockpit areas where it provides cool air for passengers and crew. Drymaster Filter Driers were selected for this tough application because they successfully met all the unusual, demanding requirements of high speed jet liner travel. In spite of constantly changing load requirements caused by extreme variations in altitudes and temperatures, Drymasters give outstanding balanced performance on the ground or at 30,000 feet.





AiResearch Freon system pictured above is one of two units installed in the Boeing 707. Each unit supplies 10 tons of cooling for air conditioning the entire plane.

View at right shows Drymaster Filter Drier as an important component of Boeing 707's air conditioning system. The Drymaster Filter Drier will also be employed in air conditioning units for other jet aircraft now being manufactured, the Douglas DC 8, Convair 880 and the Lockheed Electra.

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'Silver Shield' Presentations Being Made In Central, Northern California

SAN FRANCISCO — Presentations of the "Silver Shield" program are being made in central and northern California cities.

Meetings for the presentation are being sponsored by contractors' associations. The programs are being given by Roland R. Taylor and Dar Knowles, for the Warm Air Heating Institute of Northern California. The Silver Shield program is designed to upgrade heating, cooling, and year-round systems.

Presentation includes screened projections produced by Randall A. Nelson of Cleveland, director of public relations for National Warm Air Heating & Air Conditioning Association.

The program was presented Feb. 17 in Fresno through cooperation of Sheet Metal Contractors Association, Inc. of Central California, for which Lester H. Bergeson is executive secretary.

Other programs were scheduled as follows:

Feb. 24 at Stockton, Sheet Metal Contractors Association of Stockton, Inc., for which E. H. Grogan is secretary.

Feb. 25 at Sacramento; Sheet Metal, Heating & Air Conditioning Contractors Association, Sacramento District, Inc., for which Gale E. Dunn is manager.

Feb. 26 at San Mateo, San Mateo County Sheet Metal & Heating Contractors Association, for which Ted Alves of Redwood City is secretary.

March 4 at Modesto, Sheet Metal Contractors Association, Inc., Yosemite Area, for which John A. Rollins is executive secretary.

Taylor said other meetings will be lined up to present Silver Shield, including one in Oakland.

Randall Nelson will be in San Francisco April 16 for a general meeting with people from each of these California groups.

After the April 16 meeting, Nelson will be available for conferences with these groups for a period of 10 days, according to Taylor.

Elect Hupp Chairman

CLEVELAND — John O. Ekblom has been elected chairman of the board of directors of Hupp Corp., it was announced by Don H. Gearheart, president and chief executive officer.

Ekblom has been chairman of the executive committee and a director of Hupp since 1955.

Luxury Apartment Building Gives Each Tenant-Owner 2 Packaged Conditioners

BEVERLY HILLS, Calif.—J. Herman Co., California heating and air conditioning contractor, has put the finishing touches to one of the most elaborate jobs ever undertaken in its 56-year history, it was reported.

Wilshire Terrace, $13,000,000 luxurious community apartment building here, opened formally recently, with the tenant-owner of each of its 114 units "as comfortable as engineering know-how and skilled craftsmen can make them."

Tishman Realty & Construction Co.'s Wilshire Terrace air conditioning designer, Ralph E. Phillips & Associates, has provided both central and individual unit systems.

Each apartment contains one 2-ton and one 3-ton specially designed and packaged York air conditioning unit. These are mounted in the spaces above the ceiling of the patio which is a feature of each apartment, and on the roof of each of the building's four penthouses.

The units, which are sound insulated, supply air conditioning by means of a duct distribution system to grilles in each room. They contain hot-water heating coils and are thermostatically controlled. With two thermostats governing their own units, each occupant will be independent of the building's central plant.

Aside from the restaurant, the building's public rooms on the ground floor and mezzanine have McQuay air handling units whose chilled water coils, installed in ceiling spaces, are served by a York central chilled water plant in the basement.

The restaurant has a separate air handling system, which is also served by the York central plant. It faces an out-door dining area of flagstoned terrace surrounding a 70-ft. heated swimming pool.

Hot water reaches both the York and McQuay units throughout the building from two 250-hp. boilers in the basement, which also supply the domestic hot water system and heat the water in the swimming pool.

All apartment bathrooms and kitchens have separate mechanical exhaust systems, as do the apartment floor corridors and the restaurant kitchen areas. The five underground garage levels are ventilated by two mechanical exhaust systems with underground ducts, as well as metal ducts at the ceilings and exhaust outlets throughout.

Fresh air is inducted into the garage through gravity vents at corners. Specially designed sound traps are installed on the discharge side of each garage exhaust fan to eliminate any excess air noise late at night.

In conferring the annual award of *Progressive Architecture* magazine on Tishman architect Victor Gruen for his design of Wilshire Terrace, it was noted, a panel of outstanding architects said, "This fully air conditioned apartment house, which combines the privacy and livability of a private home with the services of a first class hotel, fascinated the jury, particularly by its ingenious staggered plan system."

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

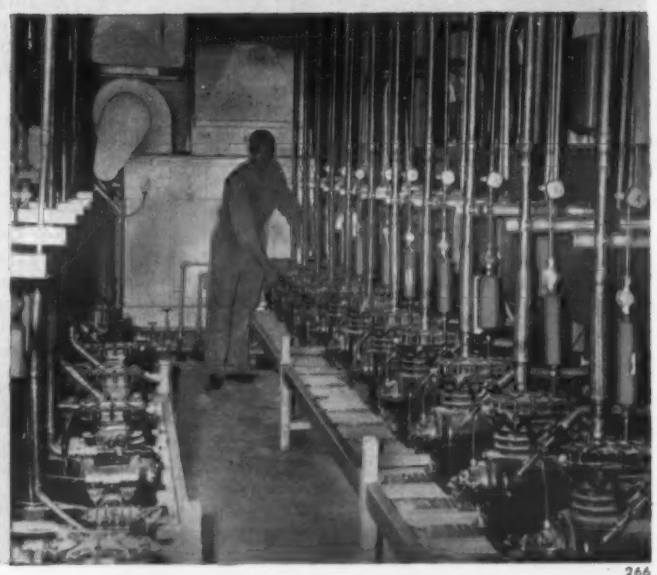
vital it pays to depend on

FILTER DRIERS

Huge King Sooper Market uses dependable Drymaster Filter Driers for refrigeration

To provide efficient and reliable refrigeration for frozen foods, King Sooper Market in Denver, Colorado, has installed the largest refrigeration system of its type in the Rocky Mountain area. In this system, which handles 1160 lbs. of Freon, there are about 3 miles of Mueller Brass Co. copper tube, fittings, valves, 28 Drymaster Filter Driers and other accessories. Drymasters have three outstanding design features that insure removal of all harmful moisture, acid, sludge and foreign particles from this big system. A new inlet distribution disc disperses refrigerant evenly throughout the entire filter block desiccant; the desiccant itself is a fully activated, pressure molded briquette that has proved itself superior in balanced cleaning and drying qualities to all other desiccants. The third unique feature is the perforated center filter tube covered by a super-fine monel screen that makes a doubly effective safeguard against dirt and sludge. The Drymaster Filter Drier is unexcelled in exacting applications like this, because it is the only filter drier that gives guaranteed *balanced* performance. It offers superb filtering and drying properties, without sacrificing one for the other.

Refrigeration system at King Sooper Market. Installation by Arctic Refrigeration, Inc., Denver, Colorado. Supplies furnished to the contractor by Refrigeration Distributors Corporation of Denver.



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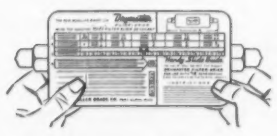

New, revolutionary slide-guide helps you select the correct Drymaster Filter Driers for every installation quickly and easily . . . Available free . . . send for yours today.

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198 Servicemen Pay To Attend First Annual California RSES 'Workshop' at Cal Poly

SAN LUIS OBISPO, Calif.—First annual "workshop" program sponsored by Refrigeration Service Engineers Society, California Association, drew an enthusiastic paid registration of 198 servicemen from many parts of California, from Arizona, and Nevada.

Hal Jarvis, educational chairman of the association, arranged the full two-day program held in the large Air Conditioning & Refrigeration Engineering building on the campus of California State Polytechnic college.

Including Cal Poly's AC&R Engineering students, workshop speakers had audiences of 300 in the building's air conditioned auditorium.

The large AC&R Engineering equipment laboratory, regularly used for teaching, and for research, was also used by some of the workshop speakers for demonstrations following their auditorium talks.

California Association RSES President Earl Stookesberry of Los Angeles called the workshop to order on Friday morning, Jan. 23, to hear a welcoming address by Harold P. Hayes, dean of engineering at Cal Poly.

Good Piping Practice

The opening talk on "Good Piping Practice" by Norman W. Sharpe, senior faculty member in AC&R Engineering, had to do with facts developed by research at Cal Poly.

Sharpe's talk handed out included "photographic studies of the return of lubricating oil through Refrigerant-12 suction lines and fittings.

"Several years ago in our system design courses we encountered a difficult teaching problem," Sharpe said.

"Numerous publications were available on the flow of the refrigerant-oil solution through Refrigerant-12 lines, but the recommendations in these publications differed so widely as to render them of questionable value for instructional purposes.

"When considering oil travel accompanying Refrigerant-12 vapor flowing upward in a vertical suction line one publication recommended a minimum vapor velocity of 600 f.p.m., while another recommended a minimum velocity of 1,500 f.p.m.

"Large differences in recommended flow conditions in horizontal lines also existed. In none of these publications were we able to find reference to experimental data."

After his talk, in a tour through the AC&R Engineering equipment laboratory, Sharpe demonstrated the equipment, and special glass piping, used to develop the actual facts about refrigerant-oil behavior.

Pumps—Centrifugal and Low Head Pressure

Cy H. Otterholm of Richard S. Dawson Co. in Los Angeles talked on "Pumps—Centrifugal and Low Head Pressure." Otterholm used cut-away Bell & Gossett equipment, and live units, to demonstrate.

Charles G. Bell of Fresno, national treasurer for RSES, presided at the first afternoon session.

"Proper Use of the Vacuum Pump" was the subject of the talk by R. A. Woltman of Los Angeles, district manager for Kinney Mfg. Div. of New York Air Brake Co. in 12 western states.

Woltman explained field application and servicing of high vacuum pumps in the refrigeration and air conditioning industry.

Use of Modern Testing Equipment on Hermetics

Tom Pendergast, vice president of Employers Insurance Service, was not able to attend, and his paper on "Use of Modern Testing Equipment In Servicing and Checking Out the Hermetic Unit," was read by A. C. Brundage of Thermo Products, Los Angeles.

Brundage gave his own talk and demonstration of how to handle major and minor repairs by using an "Airserco" model 8,000 five-panel testing unit, manufactured by Airserco Mfg. Co.

Leo Laskowski of Los Angeles, service and installation manager, Minneapolis-Honeywell Regulator Co., drew a strong response with his presentation of "Air Conditioning Controls and Electrical Wiring."

During a long and enthusiastic question-and-answer period, Laskowski had this to say about placement of zone controls:

"Any arrangement which does not put a separate control for a room or an area with different occupancy or load factor is simply a compromise.

"Do not put a control near an air return, on an outside wall, or in a corner."

How To Prevent Electrolysis?

RSES Director of Education John H. Spence moderated the final program feature of the first day's session: "Information Please."

The panel of six experts were Norman W. Sharpe, Paul O. Domke of Long Beach, R. A. Woltman, Harold A. Halls, Pete J. McCarty, and Leo Laskowski.

How to prevent electrolysis was the question that provided the feature of the panel session. The opening question was how could electrolysis best be prevented between copper and galvanized iron?

Sharpe said electrolysis does not occur if the metals are kept dry.

Domke said that brass adapters should be used to run copper tubing from galvanized connections. The brass has less copper and will help prevent electrolysis in contact with the galvanized metal.

A technical employe from Deuel vocational institute at Tracy described the serious electrolysis problems in this comparatively new building. "Many of our pipes are gone," he said.

Domke suggested the use of dielectric coupling which separates the electric current, has a synthetic breaker.

Spence said in cases where rubber grommets have been removed the copper tubing will suffer electrolytic action affecting iron.

It was stated it is safe to run copper lines in sand or clay, but such lines should not be run where cinders are present. Lines should be protected against cinders by putting sand or clay between the cinders and the lines.

In combatting electrolysis at Fort MacArthur, a maintenance man said they were using dielectric fittings, rubber hose, and other insulation. Now magnesium rod is being tried to ground out the currents.

To this a refrigeration man said it had been found possible to eliminate electrolysis by putting in PVC (plastic pipe) in 4-ft. sections.

It was pointed out that internal troubles within machines are different from problems in the ground.

Harold A. Halls said that in

(Concluded on next page)

IMPORTANCE of properly preparing for presentation of estimates and information to a customer was stressed by banquet speaker Harold P. Hayes, Dean of Engineering at California State Polytechnic college, before those attending first annual "workshop" program of Refrigeration Service Engineers Society, California Association. At the speaker's table, l. to r.: James M. McGrath, head of Air Conditioning & Refrigeration Engineering department; Cy H. Otterholm, Paul O. Domke, Norman W. Sharpe, Joe Sevier, RSES Calif. Assn. President Earl Stookesberry, Dean Hayes, John H. Spence, RSES International President George R. Klahn of San Diego, Charles G. Bell, Pete J. McCarty, A. C. Brundage, Harold A. Halls, R. A. Woltman, and John L. Zant.

"INFORMATION PLEASE" panel in lively electrolysis discussion on first day of RSES workshop. L. to r.: Norman W. Sharpe of Cal Poly, Paul O. Domke, R. A. Woltman of Kinney Mfg. Div., John H. Spence presiding, Harold A. Halls of Recold, Pete J. McCarty of Sporlan Valve, and Leo Laskowski of Minneapolis-Honeywell.

A MASTER in the use of pumps and the explanation of their proper installation and servicing, Cy H. Otterholm of Richard S. Dawson Co., Los Angeles, used cut-away Bell & Gossett models to drive home his points, in the question and answer period following his talk.

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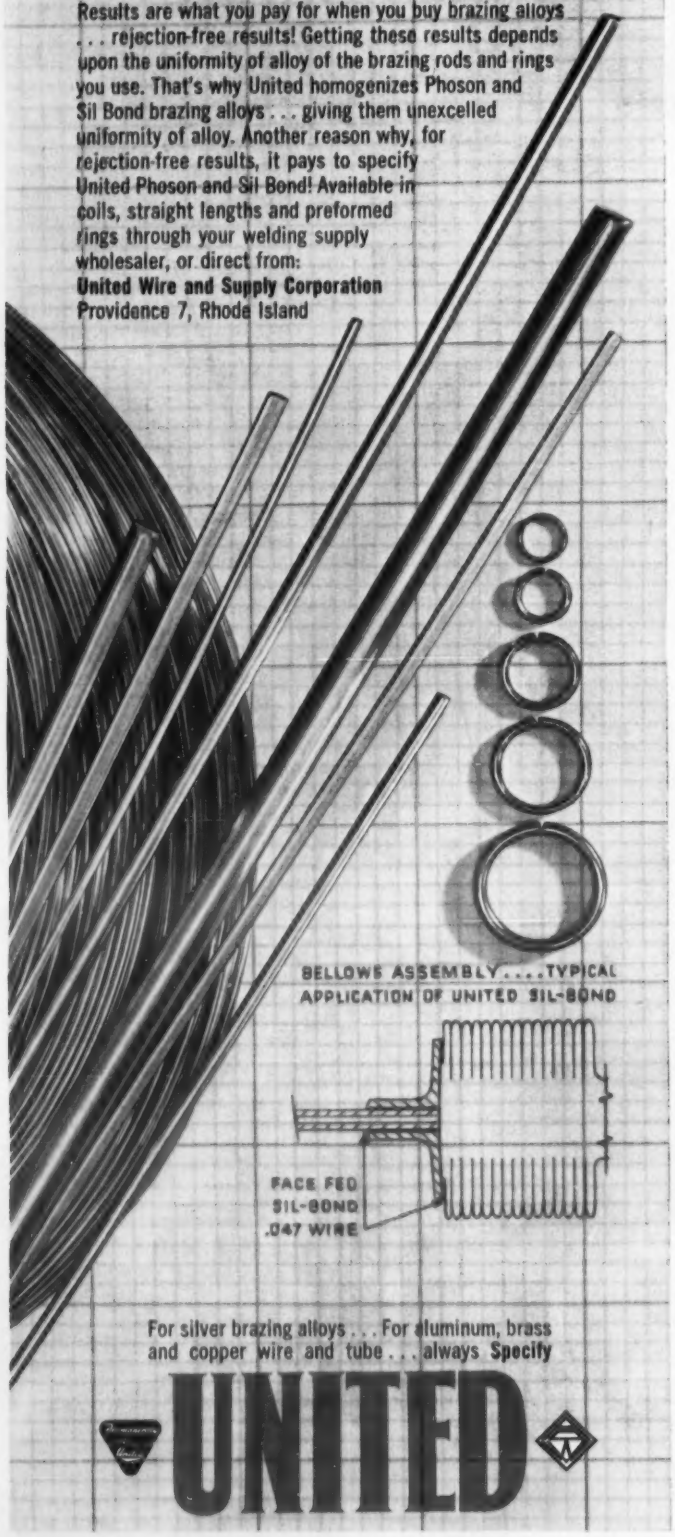

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practice where tube sheets are soldered to copper tubes, it is necessary to solder meticulously so there is a positive contact.

If it is left open for a gap some action will be there, like a short circuit.

Otterholm was asked to describe cavitation.

He explained if volatile fluids are being pumped, or if vapor space is in the line when the vapor collapses, you have a hammer blow, sometimes in the ratio of 1,000 to 1. This force is sufficient to break a ceramic seal, for example.

When vapor collapses the effect is similar to the effect when lightning burns oxygen out of the air, and other air rushes in causing thunder.

That is exactly what happens in cavitation. It can destroy the pump propellor, destroy the pump seal, even destroy the pump. Such damage does not come under the heading of factory defect, Otterholm said.

Such damage can be controlled against by throttling on the discharge side where no harm can come to the pump.

How high should risers be? was a question.

A riser can be 110 to 115 ft. high on a 10-story building, said Sharpe, based on research findings at Cal Poly.

Spence asked at what point above 12 ft. can another trap be added, or is another trap necessary?

In the ASRE Data Book a Westinghouse engineer suggests a trap every 20 ft. Are multiple traps necessary?

Sharpe said AC&R Engineering department at Cal Poly cannot by tests verify the data from that paper in the ASRE Data Book.

However, on the discharge line, changes in the temperature of that line are a part of the problem.

Halls said the colder the refrigerant the more oil will stay entrained.

Friday evening's banquet was addressed by Dean Harold P. Hayes.

Clarence I. Marksberry of Arcadia, immediate past president of RSES, California Association, presided at the Saturday morning session.

"Diagnosing the Sick System," was the topic of John H. Spence, service manager for Hussmann Refrigeration, Inc.

He advocates the use of a pressure recording instrument which in a 24-hour period can show the running time and the elapsed time; also the use of other types of recording instruments, such as the line-o-meter, and the use of amperage probes.

Pete J. McCarty of Sporlan Valve Co. spoke on "The Moisture Menace In the Refrigeration System." After his talk he conducted a demonstration.

John L. Zant of Copeland Refrigeration Corp. spoke on "Servicing the Reciprocating Compressor."

"Heat Rejection" was the topic of Harold A. Halls of Los Angeles, manager of refrigeration products for Recold Corp.

Another "Information Please" session closed the technical sessions.

Stookesberry presided at a "workshop evaluation," at which the servicemen indicated their whole-hearted approval and cited subjects they wanted for next year's sessions.

Nov. Compressor Shipments Up 18% over '57

WASHINGTON, D. C. — Manufacturers' shipments of compressor bodies in November, 1958, were more than 18% ahead of similar shipments in November, 1957, and brought shipments for the first 11 months of last year up to 88% of those in the same period of 1957. This was reported by the Small Compressor Section of the Air-Conditioning & Refrigeration Institute.

November was the fourth consecutive month in which compressor body shipments were ahead of the comparable month in 1957, and showed a greater gain over the comparable 1957 month than any other 1958 month.

Shipments of compressor bodies began to decline late in 1957, and during the first seven months of 1958 were consistently below the previous year. However, the increases shown in the four months ended in November brought the total year-to-date figure to 3,280,823 units, compared with 3,738,686 in the first 11 months of 1957.

November, 1958 shipments totaled 239,576, against 202,323 in November, 1957.

Shipment figures for the various size categories, and names of reporting companies, follow:

MANUFACTURERS' SHIPMENTS OF COMPRESSOR BODIES PRODUCED BY REPORTING COMPANIES

(Except for household refrigerators)

	Shipments Including Exports		
*Horsepower	Nov., 1958	†Jan.-Nov., 1958	Jan.-Nov., 1957
⅓ & under	95,871	1,089,649	384,623
¼			725,439
⅓	17,781	206,624	226,411
½	7,044	174,772	96,718
¾	3,304	66,009	360,472
1	29,286	643,910	839,920
1½	16,152	230,334	221,812
2	20,440	257,230	211,233
3	5,428	97,355	93,618
5	3,984	63,570	68,312
7½	2,358	31,466	41,020
10	558	9,434	9,473
15	208	4,198	3,438
20	119	1,817	2,136
25	121	1,837	1,785
30	187	1,894	
40	141	1,892	
50	69	1,271	‡6,725
60	80	958	
75	33	630	
100 & over	39	422	
Total	**203,198**	**2,885,272**	**3,293,135**
For Auto a-c— Total ...	36,223	393,968	444,159
For Ammonia— Total ...	155	1,583	1,392
Grand Total	**239,576**	**3,280,823**	**3,738,686**

*For all refrigerants except **ammonia** (excluding units for automotive air conditioning).

†Includes revised data reported to ARI.

‡Breakdown of 30 hp. and over not available for 1957.

NOTE: In order to avoid disclosing the figures of individual companies, data for two or more sizes of some units are combined on ARI summaries.

Reporting companies: Airtemp Div., Chrysler Corp.; Bendix-Westinghouse Automotive Airbrake Co.; Brunner Div., The, Dunham-Bush, Inc.; Carrier Corp.; Copeland Refrigeration Corp.; Curtis Mfg. Co., Refrigeration Div.; Frick Co.; Frigidaire Div., General Motors Corp.; General Electric Co.; Kelvinator Div., American Motors Corp.; Lehigh, Inc.; Tecumseh Products Co.; Trane Co., The; Vilter Mfg. Co.; Westinghouse Electric Corp.; Worthington Corp.; York Div., Borg-Warner Corp.

This summary includes all compressor bodies shipped by the reporting companies **regardless** of whether they were shipped separately or incorporated into a condensing unit or unitary end-use product (such as a room air conditioner, display case, freezer, or commercial refrigerator). Shipments for export are included. Shipments for household refrigerators are **not** included.

Stoddard Firms Reorganize Personnel

CHICAGO — Ford Stoddard, president of Stoddard Industries, has assumed the duties of general manager in the company's Chicago offices, it was announced.

Robert M. Stoddard, who formerly directed the manufacture and sales of "Dust-magnet" filters, will devote his full time to administrative and manufacturing duties at the Stoddard-Quirk Mfg. Co. factory which is located in Clarendon, Ark.

"This change was made in order to better handle the increased volume of business and accelerated marketing plans of Stoddard-Quirk Mfg. as well as Stoddard Industries," the announcement said.

"The reorganization of personnel within the two companies will greatly add to the efficiency of the sales and manufacture of their four product divisions—Dust-magnet furnace and air conditioner filters, dairy equipment, bakery equipment, and stainless steel products.

"All sales activities of Stoddard Industries will be handled by Ford Stoddard and his assistant, Gene O'Sullivan."

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THE NEW C.C. VALVE

(CAPILLARY CONTROL VALVE)

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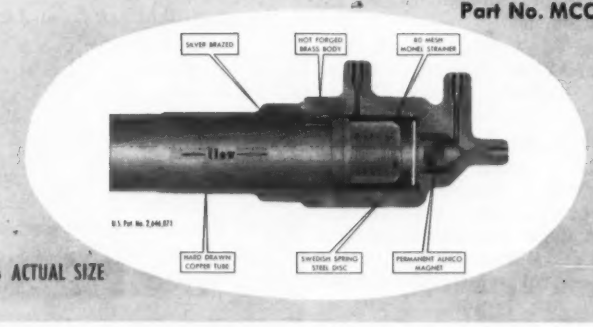

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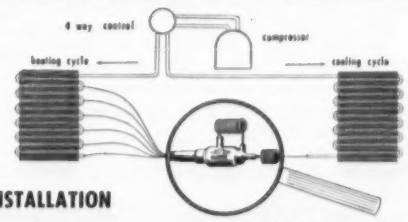
A valve specifically designed for use in reverse cycle systems. The *C. C. valve* is installed in conjunction with the capillaries between the high and low sides of the system, to provide single capillary restriction for the cooling cycle and double capillary restriction for the heating cycle.

The *C. C. valve* is applicable to all units up to and including five tons and may be used for either single or multiple capillary installations. Flow can be regulated by the size of the capillary used.

The *C. C. valve* replaces two ordinary check valves, thereby cutting installation time and costs in half.

Connection openings can be made to your specifications.



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No matter how "exact" your size requirement for copper, aluminum or brass tube . . . specify United. A precision small-diameter, thin-wall tube mill (from finest capillary up to 1½") United delivers tube to exact specifications for size, tolerance, temper, finish and cleanliness. In coils, standard mill lengths, or cut to your specifications, it pays to specify United! Write for information or quotations:

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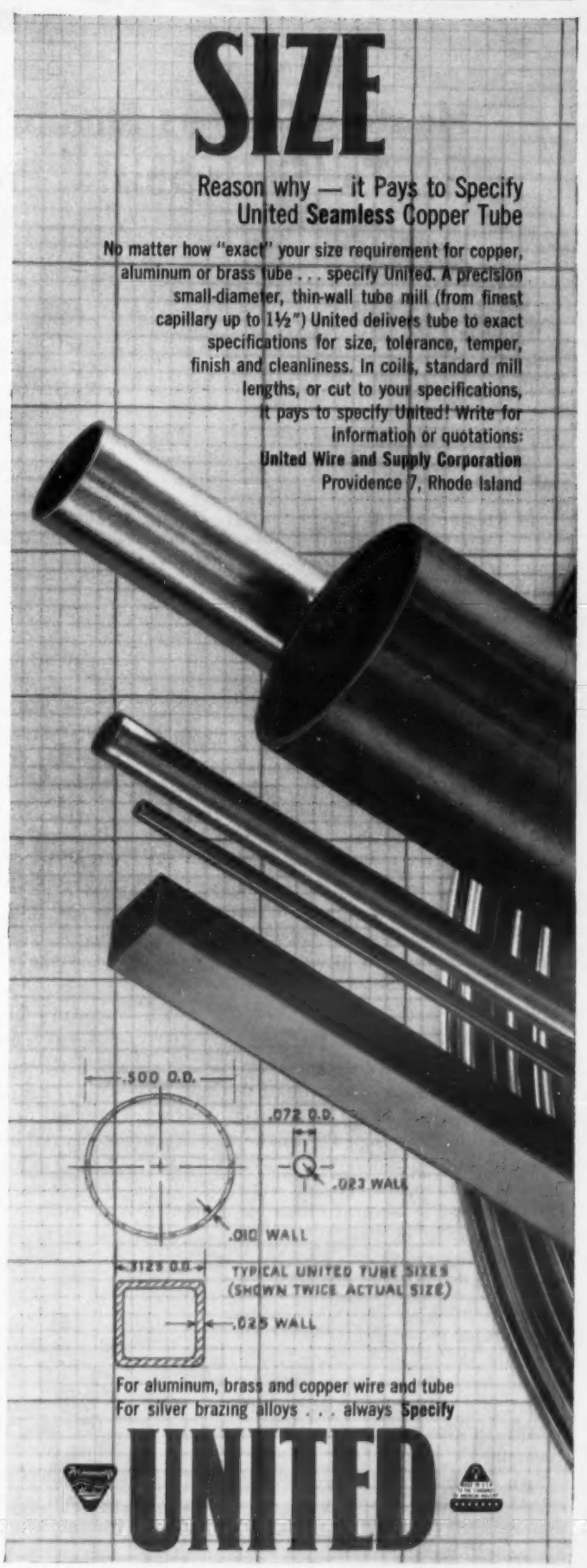

For aluminum, brass and copper wire and tube
For silver brazing alloys . . . always Specify

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Jimmy Hatlo

GLAD TO SEE YOU, SQUATWELL--HOW'S THINGS BACK AT THE OLD SHOP? OH--PARDON ME--
YOU SURE KNEW WHAT YOU WERE DOING WHEN YOU LEFT BIGDOME--- I'M TRYIN' TO LATCH ON TO SOMETHING ELSE, TOO--- ANYTHING DOING HERE, COSMO?
COSMO'S ONLY HERE A WEEK AND ALL HIS OLD PALS ARE TRYING TO HORN IN ON HIS NEW BREAD LINE--
COS THOUGHT HE WAS GETTING AWAY FROM HIS OLD JOINT--BUT IT'S FOLLOWIN' HIM AROUND!
HELLO--- WHO? OH, JOE--YEAH--- HOW ARE YOU? HUH--WELL--NO OPENINGS HERE THAT I KNOW OF RIGHT NOW---
I'D LIKE TO SEE MR. COSMO SPARKS---
BUT I JUST HAPPEN TO KNOW COS IS TRYING TO GET BACK WITH BIGDOME----
STRICTLY A.C. PLUGS IN D.C. SOCKETS--
RING A LING
TRYING TO MAKE GOOD ON THE NEW JOB--- OLD FRIENDS NOTWITHSTANDING--
THANX AND A TIP OF THE HATLO HAT TO "LUNO" LITTLE ROCK, ARK.
1-12
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Heating Dealers Should Buddy Up To 'Silver Shield' Program

FUTURE PROGRESS in the home-heating field should be signaled and encouraged by the "Silver Shield" program for upgrading heating-system dealers.

Trouble is, too few dealers and contractors have joined the parade so far.

This praiseworthy Silver Shield idea is designed to advance better *installation and service* of heating, cooling, and year-round air conditioning installations in residences and small buildings.

In Kalamazoo, Michigan, to cite a fine local example, that forward-progress program is working out mighty well. All 12 members of the Kalamazoo heating-dealer association have sold Silver Shield installations profitably. (More about Kalamazoo's experience later.)

William R. Reich of the American Institute of Management, whose critical "industry audits" of the home heating business have reddened faces, admits this program indicates that the heating industry does recognize its most harrassing and embarrassing problems, and is trying to solve them in a constructive manner.

This is a most important step. The unscrupulous and/or ignorant dealer often ignores or pooh-poos the Silver Shield program. Wherever this project does operate, however, poor-mouth and uncooperative dealers and contractors are experiencing an increasingly difficult time.

Silver Shield—a joint promotional effort designed to improve the quality (and rationalize the price) of residential heating and air conditioning systems—was originated by the National Warm Air Heating & Air-Conditioning Association some time ago. Local groups in several cities have applied for licenses to operate Silver Shield plans in their own areas; but few have swung in thus far with the genuine enthusiasm needed to make it go over in a big way.

A major requirement of the Silver Shield program is that every home heating system should be installed in accordance with instructional manuals issued by the National Warm Air Heating & Air-Conditioning Association.

Acceptable standards of performance are established for three categories—summer, winter, and year-round ("winter-summer") air conditioning systems—in these instructional manuals. These standards, worked out in conjunction with University of Illinois research, are excellent.

Every completed installation must pass inspection by a local committee before the Silver Shield decal can be applied. A local NWAHACA bureau further guarantees that any shortcomings which later may develop in an improved system will be corrected.

Cost of all this (including an extensive advertising and promotion campaign designed to sell the public-at-large on demanding the quality implied by a Silver Shield) can be met by charges assessed to dealers for every certified job.

The Kalamazoo group established $10 as the fee for each Shield, and that figure is paying off for all concerned. Contractors do not have to belong to the Kalamazoo Indoor Comfort Bureau in order to install Silver Shield systems. Nevertheless, such identified installations must meet all stated requirements, such as:

(1) Uniform temperatures throughout all rooms. Temperatures between all rooms ought to be maintained within 2° of thermostat setting at 75° F.

(2) Satisfactory floor warmth in all rooms. Temperatures 4 in. above floor surfaces should not be less than 70° F.

(3) Constant room temperatures. Temperature fluctuation within any room should not vary more than 2° of the thermostat setting between "on" and "off" cycling.

(4) Reasonably uniform temperatures between floor and ceiling. Air temperatures measured between 4 in. and 72 in. above the floor (living zone) can be maintained so that variations will not exceed 1° for each 15° difference between indoor and outdoor temperatures.

(5) Filtered air. CLEAN air should be delivered to all rooms at all times.

(6) Humidified air. Humidity should be added to all rooms when necessary for comfort and health.

HEALTH and CUSTOMER SATISFACTION are the key words in this program. Thus the "Silver Shield" becomes a patent on respectability for the heating and home air conditioning business.

More dealers and contractors should "get with it." They'll profit if they do.

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'The Conscience of the Industry'

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VOLUME 86, No. 9, SERIAL No. 1,562, MARCH 2, 1959

VILTER CLAIMS THEY WERE FIRSTEST WITH THE MOSTEST

Vilter Mfg. Co.
Milwaukee, Wis.

Editor:

In your Dec. 15 issue, on page 9, you showed pictures of Saint Cajetan's Church and you state that it is said to be Chicago's first air conditioned Catholic Church. In the November issue of "Refrigerating Engineering" there also appeared an item indicating that Saint Cajetan's Church was the first Catholic Church in Chicago to be air conditioned.

The Vilter Mfg. Co. air conditioned the famous Chicago Loop Catholic Church, Saint Peter's, as far back as 1951.

While Saint Cajetan's is a relatively small church, Saint Peter's is a massive, five-story structure with substantially more space and facilities than Saint Cajetan's. Saint Peter's has several small side chapels which are larger in capacity than the entire Saint Cajetan's Church.

We are enclosing a copy of the December, 1954 issue of the Vilter "Booster," which featured our air conditioning job at Saint Peter's. This church job has received a great deal of publicity in many publications and has been advertised by Du Pont as well as ourselves.

A. A. SILVERMAN,
President

LIKES PRESENTATION

Hill York Corp.
Miami 35, Fla.

Editor:

Subject: Reprints from January 12th Issue.

Please send, at the earliest possible date, fifty (50) reprints of the article (with photographs and captions) on pages 6 and 7 of the January 12, 1959 issue, headlined "Heat Pump Circuits Air Condition Miami Beach Apartment House —Heat, Cool Simultaneously."

May I take this opportunity to congratulate you on your presentation of information both pictorially and written copy pertaining to this installation.

WARREN BULLIS,
Advertising Manager

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'Do-It-Yourself' Service Cart Fits In Back Seat of Car, Takes Stairs

PITTSBURGH—A do-it-yourself service cart which fits into the back seat of a car and which takes stairs easily has proved so practical that its construction may be described in a coming General Electric technical manual.

Designed and built by W. J. Oxier, service manager of Shoemaker Bros. Distributors, Inc., who handle G-E home heating and cooling equipment, the cart weighs 104 lbs. and cost about $380 to build—$200 for a good vacuum pump, $100 for a vacuum gauge, and $80 for miscellaneous parts.

Basically the cart is a tubular frame built onto a frame which holds an NRC Type 2D Vacuum pump (1½-cu. ft. displacement) and a ¼-hp. G-E motor. Atop the frame sits an NRC Type 701, 115-volt vacuum gauge control. (See Fig. 1.)

One master shut-off and two secondary valves control the evacuating process. A simple plate, which makes up the back support of the cart, holds a standard double receptacle, a Buss Fustat Box-Cover Unit with on/off switch, and a 25-ft. extension cord.

All joints are brazed. Vertical bars are bolted to pump base by brazing a 1-by-⅜-in. machine bolt into a ⅜-in. washer which in turn is brazed to the end of the vertical bar. Facing the frame, the vertical bar on the right side (motor end) must be beveled in to clear motor housing and end-bell. The diagonal brace on the same side must be bent in such a way as to clear the motor. The brackets for holding the extension cord is ½-in. EMT conduit brazed to the back of vertical bar.

The axle is prevented from turning in the base of the unit by drilling and tapping the axle and installing a brace on the axle and the compressor bolt under the base.

To prevent entrance of moisture and foreign matter into the pump, the discharge port is kept sealed during storage and transport by means of an adapter. This adapter (Fig. 3) is a short piece of ⅝-in. o.d. tubing, a ⅜-in. SAE x ¼-in. IPT fitting, and a ⅜-in. SAE flare cap. The ¼-in. IPT end of the fitting is silver brazed into the end of the ⅝-in. tubing. The other end of the tubing is slipped through a fiber disk with a ⅝-in. hole. The tubing is flanged and the flange must be recessed into the flat side of the disk to assure an air tight seal.

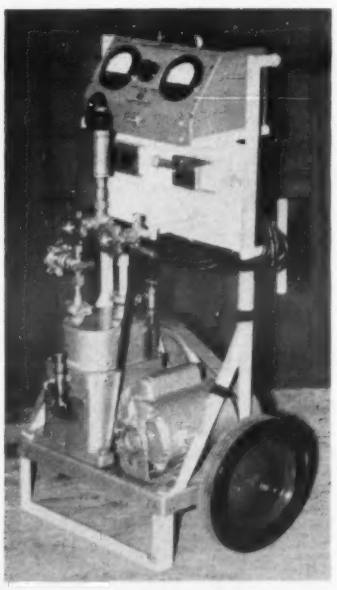
Over-all dimensions of Oxier's cart are: height 35 in., width 20 in., depth 19 in.

* * *

Material List for Service Cart

1	26″ x ¾″ x ¼″	18 gauge angle	Valve Manifold Brace (cut to fit).
2	8″ x ⅝″ x ⅝″	18 gauge angle	Vacuum Gauge Brackets.
1	13⅞″ x 7″	18 gauge plate	Back Plate.
2	31¼″ x ¾″	EMT Conduit	Vertical Bars.
1	14¼″ x ¾″	EMT Conduit	Horizontal Bar.
2	6¾″ x ¾″	EMT Conduit	Handles.
2	15″ x ¾″	EMT Conduit	Diagonal Braces (cut and bend to fit).
1	28″ x ¾″ x ¾″	18 gauge angle	Front Stand (cut and bend to fit).
2	10″ wheels 1.75 tires.		
1	24″ x ½″ stock rod		Axle (cut and drill to fit).
2	Pastic Handle Grips.		
2	2″ x 4″ Electrical Handy Boxes.		
1	Double Receptacle and Cover.		
1	Type SSU Buss Fustat Box-Cover Unit with Switch.		
2	½″ EMT Conduit Connectors.		
1	2¾″ x ½″ EMT Conduit.		
1	Heavy Duty Plug.		
1	25′ 16-2 G-E Type S Extension Cord.		
Approximately 30″ 14-2 Romex Wire with Connectors.			
1	Superior 204-6 Packless Line Valve.		
1	Superior 2VM-64 Valve Manifold.		
	valve connectors ¼″ SAE.		
	end connectors ⅜″ SAE elbows.		
1	¼″ MPT x ⅜″ Female SAE.		
1	⅜″ Female SAE Coupling (solid) with gaskets.		
1	¼″ Female SAE x ⅛″ MPT.		
1	⅛″ FPT Brass Coupling.		
1	⅜″ Male Flare SAE x ¼″ MPT.		
1	⅜″ SAE Cap.		
1	3½″ x ⅝″ o.d. Tubing.		

Welding material, bolts, nuts, washers, and screws are not listed.



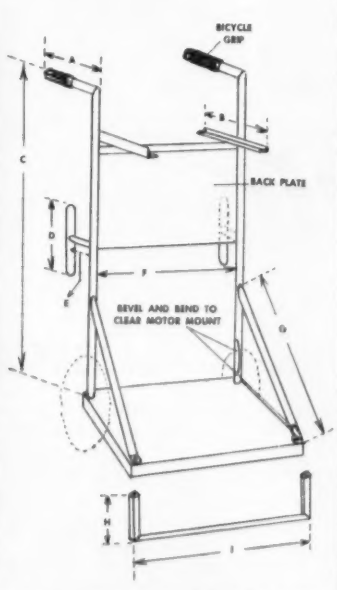


FIG. 1—Photo of Do-It-Yourself Service Cart. Fig. 2. Drawing of cart showing parts and dimensions. Key to dimensions follows: a—6¾″, b—7½″, c—31¼″, d—7″, e—2¾″, f—13⅞″, g—15″, h—6″, i—15″.

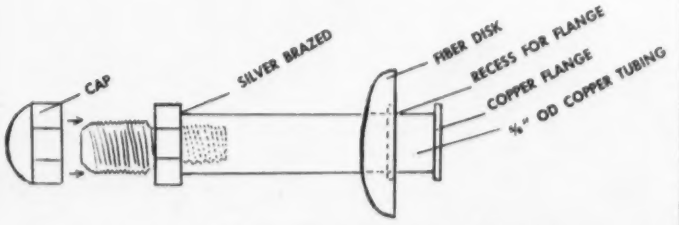


FIG. 3—Adapter to prevent contamination of pump.

White-Rodgers Opens West Coast Offices

ST. LOUIS—Opening of two new west coast sales and service branch offices for White-Rodgers Co. has been announced.

Located in Los Angeles and Portland, the new offices assumed the duties formerly handled by Pacific Scientific Co. as manufacturers' representative.

Staffed by factory-trained personnel, the new outlets are stocked to handle all sales, service, and application of the White-Rodgers line of heating, refrigeration, and air conditioning controls west of the Rockies, the announcement said.

For California, Nevada, Arizona, and Hawaii, district headquarters will be 201 Glendale Blvd., Los Angeles 26.

District headquarters for the northwest area is located at 2846-52 N.E. Glisan St., Portland 12, Ore. The office will serve Oregon, Washington, Idaho, western Montana, and Alaska.

In addition to the two new offices, resident engineers will be located at San Francisco and Seattle.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

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Marquette U. Symposium--

(Concluded from page 1)

student efficiency in learning, for example, drops appreciably when outside temperatures go above 60°. At such times, mechanical cooling, not ventilation alone, is the answer. Washington has this condition 44% of the time; Cleveland 34%, Dallas 62%, St. Louis 43%, Chicago 32%.

"Then too, he added, schools are increasingly being used in summer."

Codes Allow Reduced Ventilation Air

Haines surpised a major part of the audience with the statement that the Chicago code and others allow a significant reduction in outside air requirements when a properly engineered activated charcoal filtering system is included in the air conditioning.

"A nominal 20,000 c.f.m. ventilation requirement can be reduced by as much as 50%," he held, "with the resultant savings in machine costs. Remember that outside air is not usually necessary for oxygen supply or carbon dioxide removal; it is more necessary for odor removal, which can be well taken care of by activated charcoal."

Enthalpy entered the conference when Daniel D. Wile, vice president of engineering, Recold Corp., gave a history of psychrometric charts.

"The thermodynamicist and the application engineer each has an idea of what he would like to see a chart do, and no totally suitable chart has yet been developed," Wile opined. "As a general principle, though, I hate to see a chart prepared to stress some academic point to the detriment of the over-all intent of the chart."

In line with this opinion, Wile showed that the thermodynamicist's aversion to the use of *relative humidity,* instead of *relative saturation* is technically correct, but insignificant practically.

On the other hand the "over-practical" approach which allows the use of the standard psychrometric charts at any elevation with only some arbitrary correction factor should be reconsidered. "I propose a chart for 1,000 ft. elevation and one for 5,000 ft. The first will be used from below sea level to 3,000 ft.; the second for 3,000 to 7,000."

Apparently without foreknowledge of the two speakers involved, a paper on high and low temperature water heating systems and a paper on control of water systems dovetailed into a neat package on hydronics.

On hot water systems, Gilbert F. Carlson, engineering department, Bell & Gossett, divided hydronic heating systems into three major classifications:

low temperature hot water where primary water temperatures are less than 250°, with pressures less than 160 p.s.i.g.;

intermediate temperature hot water systems which use primary water up to 300°, but which still use standard valves and fittings;

high temperature water systems where primary water is above 400° and pressures are such that schedule 80 pipe and heavy-duty valves and fittings are required.

20° TD Taken to Task

Taking to task the conventional 20° temperature drop design of hot water systems as no longer a practicable design limit, Carlson showed that doubling the temperature drop allows a decrease of one size in pipe sizing and a reduction of pump horsepower by one-half. He then briefly compared systems with 20°, 50°, 100°, and 200° temperature drops, showing that a valid economic evaluation must be made to justify fully the decision to increase TD.

"Design TD must not be raised arbitrarily with no thought to over-all equipment changes like heat exchangers, pipe sizes and schedules, fitting and control costs."

Carlson then gave an elementary description of the basic high temperature systems — steam drum, constant pressure, and variable pressure.

"All of these will work; the significant difference between low and high temperature systems is that the latter require highly competent operators."

He predicted that an increase in the use of high temperature water systems for heating will increase the use of absorption air conditioning systems.

Hydronic Controls Depend On Pressure Drop

Automatic control of a hot water system was discussed by Harold W. Alyea, director of engineering, Johnson Service Co.

Supporting Carlson's preference for higher than 20° temperature drop design, Alyea held that from the controlability viewpoint, "the higher the temperature drop, the better." Other items which add to the controlability are: use of a flat characteristic pump; provision for by-pass in the system to maintain full flow in as much of the system as possible at all loads; use of an "equal percentage" type control valve, rather than either the quick

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opening or the linear type valve.

"One major point on which the system designer and the valve engineer frequently disagree," he admitted, "is pressure drop across the control valve.

"The design engineer honestly feels he wants no pressure drop across the valve; the valve engineer knows that maximum practical valve performance and system control comes when a pressure drop across the valve is 25-50% of the total pressure drop across the system."

Answering a question, Alyea stated that a normal flow control valve may be placed in either the supply or return line of a convector.

The three-way valve can be placed on either side also. If placed on the supply side with two outlets and one inlet, it is considered a by-pass valve; when mounted with two inlets and one outlet on the return side, it is considered a mixing valve.

"Future control may depend more on modulating the temperature of the primary water than on controlling the flow rate of the water," Alyea predicted.

Absorption Units Use Any Energy Source

High temperature water, low temperature water, steam, or process fluids can be used for the energy source of absorption units, according to Owen Kuhen, sales manager, absorption refrigeration division, Carrier Corp.

Kuhen made some firm predictions about absorption units. "Today there is a gap from about 25-ton to 60-ton absorption equipment. Not too long ago the gap was from 25 to 100. Additional intermediate tonnages are coming relatively soon." Also in the works are direct-fired absorption units, he said.

Giving a brief description of the principles of operation of absorption equipment, Kuhen then listed the several factors which usually tend to favor absorption over centrifugal compression equipment against which they are most directly competitive. The list:

steam is available;

steam rates are lower than electrical (including consideration of demand rates on electricity where they at first seem lower than steam);

no transformer or special wiring needed if not already in;

space and weight savings—both in equipment and in piping.

Kuhen pointed out that cooling towers on absorption units run with an 18° rise in condenser water, rather than the 10° customary on compression equipment. Water usage is 3.6 g.p.m. per ton as compared to 3.0 g.p.m. on compression.

Quieter operation was claimed for absorption units, a claim which tied in neatly with a discussion of noise measurement and control by Robert E. Parker, vice president of research, Ilg Electric Ventilating Co.

Scientific Noise Control 'Years Away'

After a detailed discussion of some technical phases of sound measurement, Parker rather regretfully admitted, "Noise control necessitates sound measurement, but adequate sound measurement and noise ratings on equipment are years away."

He claimed that his company's DSN 10910 provides a reproducible standard sound source. Such a sound source is an admitted prerequisite before any ratings or measurements can become other than arbitrary, a major reason being the highly subjective nature of reaction to noise.

More subjective perhaps is the reaction to odors, and the basically simple techniques of odor measurement were described by Burgess H. Jennings, director of research, ASHRAE Laboratories, Cleveland.

Jennings explained that the frequently heard "threshold numbers" are based on the maximum dilution an odor can undergo and still be detectable by a "jury" or test panel of "normal noses." The higher the threshold number, the stronger the odor.

"As unscientific as this subjective test might seem," Jennings held, "test reproducibility is remarkable among juries of normal people."

Switching to the currently popular subject of ions, Jennings stated flatly that while evidence is high that ailing persons are helped by negative ionization, "with most normal people it seems to be a matter of indifference. Some tests indicate that 90% of the people in a given occasion might prefer negative ionization; the remainder like it positive."

"Pressure drop in heat transfer equipment is a necessary evil, but don't allow it to be parasitic," warned Clyde S. Simpelaar, chief engineer for research, Modine Mfg. Co., in a discussion of high efficiency heat transfer surfaces.

"Even the term *high efficiency* is relative and will be a different absolute for each set of engineering compromises," Simpelaar added.

And in such practical problems as the relation between the refrigerant condenser and the car radiator on an auto with air conditioning, empirical testing and field engineering must always be resorted to. "Otherwise, we would need only mathematicians, and no engineers," he concluded.

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Ucon Refrigerant 113 Trichlorotrifluoroethane
Ucon Refrigerant 114 Dichlorotetrafluoroethane

UNION CARBIDE CHEMICALS COMPANY
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TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Plastic Terminology, Application (4)

Still another well-known thermoplastic family are the **acrylics.** "Plexiglass" and "Lucite" are trade names familiar to many. Chemically, this group is derived from acyrlic and meth-acrylic acids, their esters and other derivatives. Known best as crystal clear sheets used in airplane canopies and light diffusers, acryclics are also used in panal formulations, adhesives, coatinga. They have a unique ability to transmit ultra-violet and are used extensively as panels in solariums.

"Orlon" is acrylic clothing fiber, used for sweaters, suits, and shirts.

Returning to thermosetting resins, the newest significant plastic family are the **epoxies**—based chemically on ethylene oxide and derivatives. This material has already been approved for Class B electrical insulation in the form of tape and wire enamel. Together with polyesters, epoxies are finding application in insulating varnishes.

As liquid resins, epoxies are employed commonly in casting, potting, laminating, and adhesive-bonding applications. On curing, epoxies are hard, rigid, thermoset compounds. Very dimensionally stable, the thermosetting resins have been adopted by the tooling industry for drawing and working metals in dies, also for use in jigs and fixtures.

Epoxies have good dielectric properties.

Dinnerware, buttons, handles, cosmetics containers, electric mixer housings are some of the items from **amino** type plastics. This major group is divided into two classes—the urea-formaldehyde class and the melamine class, the latter familiar because of the "Melmac" dinnerware and Formica table and counter tops. Mar-proof finishes for interiors and appliances are another application of both types of aminos.

A previous Technical Center discussed foamed-in-place insulation—using **polyurethane** materials, also called **isocyanates.**

By properly mixing urethanes and polyesters, it is possible to get foams of a wide range of flexibility or rigidity. With an excess of the isocyanates, in the presence of water, carbon dioxide is generated and provides the foaming action. (Refrigerant-11 has also been used as foaming agent.) Thus, polyesters, isocyanates, and water are basic ingredients of the foamed insulation now posing an extensive change in insulating procedure to the industry.

A magnet wire insulation insulation making use of urethanes and vinyl formal (Formvar) gives good coatings with respect to solderability at low temperatures and resistance to softening by Refrigerant-22.

This superficial look at plastic terminology shows the complexity of this new invader. Other than knowing the basic groups and important frequently encountered terms, the non-plastics expert would spend his time poorly in attempting fully to understand this widespread field.

In practical matters of application, the refrigeration engineer has no choice but to seek the counsel of the plastics expert. Because plastics are man-made, there is often no background of knowledge upon which to draw, and only trial and error can be used to reach final conclusions. Certain laboratory and accelerated tests can be used to screen out bad prospects for a specific job, but only field application can determine ultimate applicability.

Because of this, there will be plastic component failures and malfunctions as newer materials are introduced or as older materials are given new assignments. In spite of this, however, there is no doubt that these plastic invaders will assume more important roles in this and all other industries.

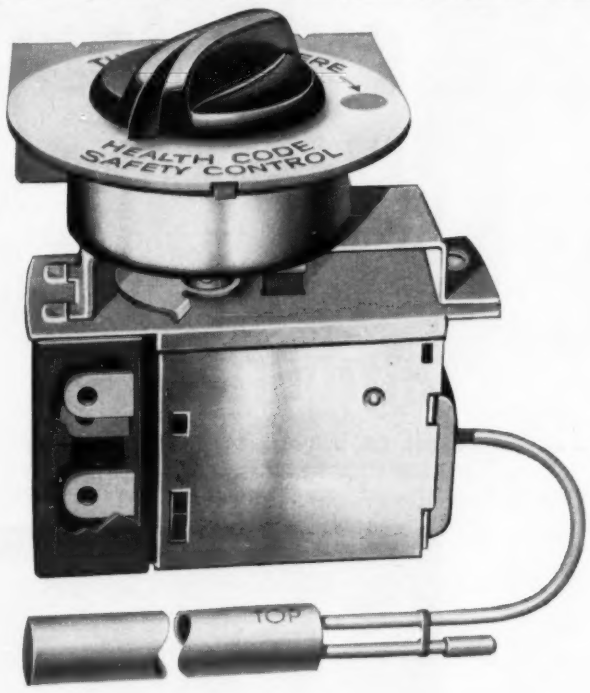
It is unrealistic, therefore, to ignore a polyester, hoping it will go away. Your only choice is to learn to call it by name; in time you'll know what it can and can't do; where it is used and why.

(Next: "Can I charge liquid into low side?" A Review of Refrigerant Charging Procedures.)

NEW HEALTH CODE SAFETY CONTROL

for coin vending machines dispensing cold or hot items

RANCO F11



Recent changes in U. S. Sanitation Ordinance and Code suggest that vending machines with storage compartments for readily perishable food and beverage items be equipped with controls to insure maintenance of temperature *not higher than 50° F.* (cold items) nor lower than 150° F. (hot items). Only exception is a 30-minute recovery period following loading or servicing, after which time the system must have returned and be in normal temperature operation.

Ranco has developed two controls (F11-1000 for cold vending and F11-1200 for hot vending) which automatically prevent machines from vending food or beverages at unsatisfactory temperatures. They are in addition to, and do not interfere with, the regular cycling thermostat required in the machine.

PRESCRIBED SAFETY VALUES

F11-1000 (cold vending): prevents mechanism from dispensing when refrigerated compartment temperature rises to 50° F. or above.

F11-1200 (hot vending): prevents mechanism from dispensing when heated compartment temperature drops to 150° F. or below.

30-MINUTE RECOVERY PERIOD: Both controls have a 34 (±4)-minute time range, non-adjustable.

OPERATION OF THE CONTROL

The F11 Control is a semi-automatic type with manual reset mechanism responding to temperature change and is equipped with a mechanical, spring-wound timer as a component.

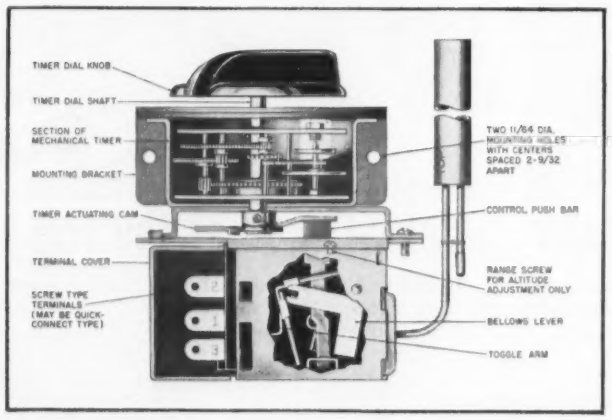
AUTOMATIC FEATURE of the control prevents coin mechanism from dispensing items when temperature of the compartment reaches the prescribed safety setting.

MANUAL FUNCTION is through the mechanical timer (not made by Ranco). Dial knob must be turned to an indicated stop to start the timer after loading or servicing. An actuating cam-push bar mechanism closes the contacts circuited to the machine so it will continue to dispense through the fixed 34-minute recovery period. If the system does not recover to normal operating temperature, the push bar unlatches to prevent dispensing. If the system recovers, the push bar remains latched and dispensing continues.

ALTITUDE ADJUSTMENT: correction provided for elevations to 8000 feet.

ELECTRICAL RATINGS: (Listed with UL and Canadian Standards Association) 115 volts a.c. non-inductive, 2000 watts, 7.4 amps. full load, 45 amps. locked rotor. 230 volts a.c. non-inductive, 1000 watts, 3.7 amps. full load, 23 amps. locked rotor.

Special modifications are available to meet your product needs through your Ranco distributor.



See your Ranco Distributor or write direct for complete, detailed Bulletin 1726 with wiring diagrams, technical data on F11 Series controls.

Ranco® INCORPORATED
COLUMBUS 1, OHIO

More than 100 million Ranco Controls now in use

Sporlan Meeting Opens 25th Anniversary Year

ST. LOUIS — Sporlan Valve Co. officially opened its 25th anniversary year with a national sales meeting and company conference here.

After a "kick-off" breakfast at the Clayton Inn, attended by 30 sales engineers and company officials, the group visited the Sporlan factories, met with company executives, then traveled to Pere Marquette Lodge in Grafton, Ill., for a three-day sales meeting.

Activities during each of the three days were divided into general sessions dealing with the introduction of new products, the development of new sales methods, and distribution of technical information.

Augmenting each of the general sessions were informal "workshop" groups for open discussion of product application, installation, and service.

Removes MORE SCALE per Dollar Spent!

VAPCO SCALE REMOVER

The activated acid in powder form containing inhibitor, wetting agent and algaecide for a COMPLETE cleaning job under the most severe conditions. Easy on galvanize — safe for equipment. Keeps head pressure down — efficiency UP! 10 to 50 pound drums with "Tel-Action" pH indicators.

VAPCO-HIB

Make your own cleaner with VAPCO-HIB. Added to muriatic acid, VAPCO-HIB increases the acid action, yet provides outstanding protection to metals including galvanize. Supplied in 8 and 32 ounce bottles and bulk.

GUARANTEED Vapco PRODUCTS

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GARMAN COMPANY
ST LOUIS 23, MO

500-Bed Army Hospital In Fort Dix, N.J. One of First In Northeast To Be Cooled

FORT DIX, N. J.—U. S. Army Engineers are constructing a nine-story, air conditioned 500-bed hospital here to replace a rambling wooden structure built prior to World War II, it was announced.

The hospital is designed to accommodate possible future expansion to 1,000 beds. It is one of the first military base hospitals in the Northeast to be air conditioned.

The new hospital is part of a general remodernization being conducted on the 55 square miles which comprise the U. S. Army Infantry Training Center for the entire First Army area. This base was started as a vast city of tents during the first World War and since then has been the basic training center for hundreds of thousands of soldiers. The base presently accommodates 35,000 to 40,000 personnel.

The building will have a gross floor area of 327,820 sq. ft., approximately half of which will be contained in two nine-story ward wings and a nine-story service wing. The balance of the area is contained in a service and administration wing.

A high pressure induction system will provide summer cooling for the hospital and associated buildings. Two Worthington centrifugal refrigeration machines located in the basement mechanical equipment room will produce 1,022 tons of refrigeration to chill 1,238 g.p.m. of water from 54° F. to 44° F. The chilled water will be circulated to air handling units and to 563 Worthington under-the-window induction circulators throughout the entire building.

The heating system will be forced hot water to induction units and low pressure steam to air handling units and convectors. Steam will be provided by a boiler house. The operating and delivery rooms will be heated by radiant panel heating.

Architect for the project is Ziegler-Childs & Paulsen, Jersey City, N. J.; the engineer is Vogelbach & Baumann, also of Jersey City. The mechanical contractor is Charles Simkin & Sons, Perth Amboy, N. J.

Multi-Level N. Y. Times Building To Get Two 800-Ton Water Chillers

LA CROSSE, Wis.—Two big Trane "Turbine CenTraVac" refrigeration machines will be the nucleus of the air conditioning system for the new building of *The New York Times* at West End Ave. and 62 St., it was announced by Trane Vice President A. C. Menke.

The multi-level building is under construction and will be in operation early this year.

The structure will be used as a subsidiary printing and distribution point. The main plant, as well as the editorial and business offices, will remain at its present location just west of Times Square on Forty-third St.

Ultimately, *The Times* plans to enlarge the new building and move all of its operations there. However, no date has been set for this step.

The air conditioning machines will be installed in the subbasement and supply enough chilled water to cool the entire building. These two centrifugal water coolers are rated at 800 tons each.

Menke describes the machines as essentially identical to the electrically-powered CenTraVac. The only modification in the new CenTraVac is its method of drive—a steam-powered turbine instead of the conventional electrical motor.

"The Trane Co. spent several years in the research, design, and development of the Turbine CenTraVac," Menke said "With its integral design concept, the Turbine CenTraVac represents a major advance in turbine-drive system design.

"In this design, the impeller is mounted directly on the turbine shaft and is supported by the turbine bearings. An integral assembly is formed by the compressor and turbine."

Menke explained that with the impeller mounted on the extended turbine shaft, the compressor requires no thrust or journal bearings, only a shaft seal.

Just the ring collar of the modified shaft seal rotates. Carbon seal ring, retainer, and tension spring are all stationary. Separation of oil and refrigerant is always maintained. An auxiliary oil pump also assures positive lubrication at all times.

"The Turbine CenTraVac," said Menke, "is basically a packaged piece of equipment. With simplicity as its keynote, it's easy to install with low operating costs, quiet, and vibration-free."

Architect for the project is Eggers & Higgins, consulting engineer is Meyer, Strong & Jones, general contractor is Rheinstein Construction Co., and Alvord & Swift is the mechanical contractor. All are New York City firms.

Air Conditioning Is Part of Modernizing 117-Year-Old Building In Albany, N. Y.

ALBANY, N. Y.—The 117-year-old Court of Appeals hall here will be air conditioned when its reconstruction is completed at the end of 1959, according to Carrier Corp. whose equipment will be used.

Under a $3,000,000 modernization program the interior of this three-story building for the State's highest court has been stripped. A new motif designed by Gehron & Seltzer, New York City architectural firm, under direction of Carl W. Larson, state architect, is now under construction. Air conditioning, better lighting, and modern interior decoration are included.

The air control system assures that efficiencies provided by refurbishing will be effective, Charles V. Fenn, vice president of the Machinery & Systems Div., stated. An equipment contract was awarded to Carrier by Tougher Heating & Plumbing Co., Inc., of Menands, N. Y., mechanical contractor. James King & Son, Inc., of 350 5th Ave., New York City, is general contractor.

It is a general policy of the State of New York that all new state office buildings be air conditioned. This procedure applies to existing facilities if and when economically feasible, it was pointed out.

Quiet operation of comfort apparatus was one of the chief objectives given Rutherford L. Stinard, New York City consulting engineer, in designing the system. A hermetic centrifugal refrigerating machine with 118 tons' capacity will provide cooling.

A careful study revealed that it would be more economical to restore the old building than to tear it down and build a new one. Furthermore, the restoration and modification of this structure will preserve one of the State's finest historic landmarks.

Handy Tube Bender

Smoothly Bends any pipe or Tubing 3/8"-1 1/8" O.D.

• Just a twist of the wrist assures perfect, even bends — right angle, any angle, U and offset. Save enough on ONE job to pay for your HANDY BENDER.

See your supply house—or write for free folder today.

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Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.

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NEW! **Amana**

REFRIGERATION, INC.

ONE OF THE LEADING AIR CONDITIONER MANUFACTURERS

uses

REVCOR'S NEW DOUBLE INLET BLASTAIRE BLOWER WHEELS

because . . . Revcor's New Double Inlet Blastaire Blower Wheels use less space and meet the high performance and quality standards demanded by Amana!

REVCOR SINGLE AND DOUBLE INLET BLASTAIRE BLOWER WHEELS ARE USED BY OVER 60% OF THE ROOM AIR CONDITIONER MANUFACTURERS!

Write For Technical Details

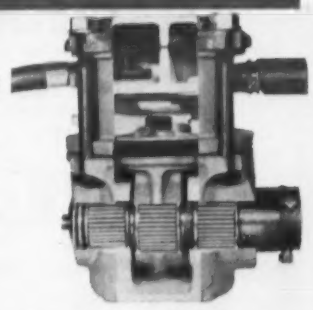
Revcor, INC. 251 EDWARDS STREET CARPENTERSVILLE, ILLINOIS

ACE, the quality line for air conditioning and refrigeration

MODEL 77

Diaphragm Descaling Acid Pump

Descaling compounds can't affect this pump! All parts in contact with compounds are completely acid-resistant. Can be supplied as portable unit with pump and motor mounted on sturdy base and with convenient carrying handles.



Orders shipped the SAME DAY received.

Plus a complete line of centrifugal pumps

. . . sized to fit your needs. ¼ H.P. thru 10 H.P. Easy to install and compactly built. Advanced features include exclusive baked-on lifetime finish to enhance appearance and resist corrosion, John Crane mechanical seal, and all-bronze one-piece impellers. Continuous duty motor, 1750 rpm or 3450 rpm.

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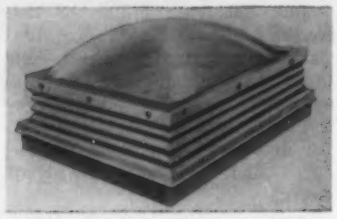
FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES

Single Unit Is for Daylighting, Ventilating



● A development combining daylighting and ventilating in a single unit is announced by E. Van Noorden Co., Dept. AH&RN, 75 Magazine St., Boston 19.

These "Vanco" penthouse "Louverdomes" are designed for on-roof installations which require both overhead lighting and ventilation. They are factory assembled units consisting of Vanco "Domelites" set on extruded aluminum louvered penthouses.

The Domelites, made of shatterproof, weather-resistant, one-piece acrylic "Plexiglas," are said to provide an even transmission of light. Louvered penthouses of extruded aluminum provide four-sided ventilation.

'Alumalift' Raises 500 Lbs. as High as 9 Ft.

● A lightweight aluminum lift for installing and servicing ceiling-mounted heating units and air conditioners, transom air conditioners, and any unit in a location above the average height is available from Amble's, Dept. AH&RN, 157-06 Northern Blvd., Flushing, L. I., N. Y.

Called "Alumalift," the device will lift the average unit (up to 500 lbs.) as high as 9 ft., according to the company. Total weight is approximately 50 lbs. Measurements are 35 in. wide, 26 in. deep, and 7 ft. high.

The lift can be transported in panel trucks or on top as a ladder.

It is also useful for storing merchandise in warehouses or anywhere a lightweight lift is needed, the company pointed out.

Tool Cuts Time Needed For Installing Clamps

● Production of a new hand tool that is claimed to cut clamp installation time up to 50% is announced by TA Mfg. Corp., Dept. AH&RN, 4607 Alger St., Los Angeles 39.

The tool is described as "a new kind of a plier that secures bolt, while clamp is mechanically closed and locked in place. This frees both hands for attaching nut or for stacking additional clamps into lock position. Misalignment is prevented because proper closure is insured at all times. Worker fatigue is greatly reduced."

These pliers are said to be particularly useful in cramped quarters. At present, they are limited to the standard No. 8 or No. 10 size bolts.

Humidifier Uses No Evaporation Plates

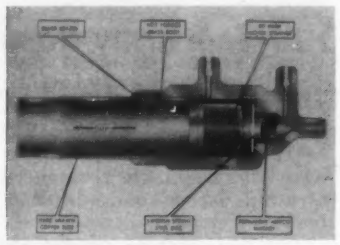
● Called a "Climatizer," an electric humidifier for warm air furnace systems is being offered by Keeney Mfg. Co., Dept. AH&RN, Newington 11, Conn.

The packaged unit is constructed with a built-in heating element producing a vapor which rises directly into the air stream, according to the manufacturer. No evaporation plates are used.

A feature of the humidifier is a float switch with a completely enclosed rocker magnet which activates a solenoid valve. The action of the switch controls the level of the water in the aluminum body.

Model 250 Climatizer is wired to operate when the blower is on. Model 251 is wired with an electric plug for continuous operation.

The plier retails for $9.95.



Capillary Control Valve For Reverse Cycles

● A new capillary control valve —Part MCC-1—a valve specifically designed and engineered for use in reverse cycle systems, has been introduced by Watsco, Inc., Dept. AH&RN (M), 1020 East 15th St., Hialeah, Fla.

The valve is installed in conjunction with the capillaries between the high and the low side of the system, to provide single capillary restriction for the cooling cycle and double capillary restriction for the heating cycle, it was pointed out.

The valve body is made of hot forged brass and hard drawn copper tubing, silver brazed. The action employs a Swedish spring steel disc and an alnico permanent magnet. A built-in 80 mesh monel strainer affords protection to the capillary tube.

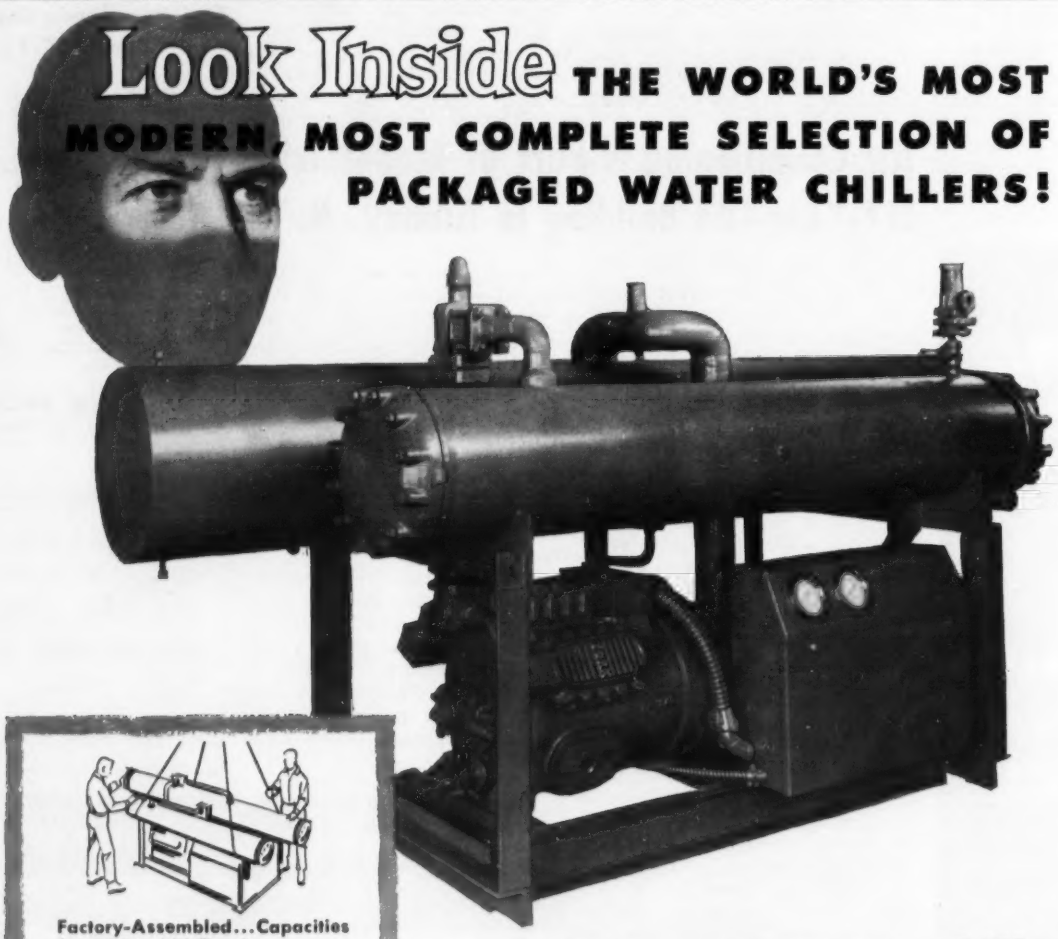
"During the cooling cycle, pressure opens the disc, allowing single capillary restriction; on heating or reverse cycle, the pressure closes the disc and the refrigerant passes through both the secondary and the primary capillary for double restriction," the company explained.

"The capillary control valve is applicable to all units up to and including 5 tons and may be used for either single or multiple capillary installations. Flow can be regulated by the size of the capillaries used."

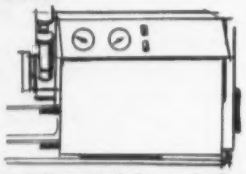
Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.

Tell him: "AH&RN sent me!"



Factory-Assembled...Capacities from 18 to 300 Tons!
Units come complete with interconnecting piping and fully wired. Refrigerant charging and hook-ups to power and water sources are all that is necessary to make the system operable.



Panel Mounted Controls Protect System!
Controls are fully wired. Include low oil pressure switch, high- and low-pressure cut-out...plus other protective devices.

Flooded Type Cooler Assures Efficiency!

Water flows inside the tubes and refrigerant surrounds them. Permits use of float control for stable cooler operation at all load conditions.

York Packaged Water Chillers Require 20% Less Floor Space

York Factory-Assembled Water Chillers provide an economical, practical answer to the space and cost problems of air conditioning new buildings. With components integrated in such a way that units take up 20% less floor space, York Packaged Water Chillers may be easily installed anywhere in the building without special foundations or structural supports. Operation is quiet, free from vibration.

And York meets the needs of today's diverse construction with the most complete line of space-saving water chillers in the industry... offering a broad range of models from 18 to 300 tons!

As for operating economy, York Packaged Water Chillers have exclusive controls which save power by automatically adjusting compressor output to prevailing load conditions, without attendant supervision. So for continuing economy from the planning stages to installation and operation, contact your local YORK representative. Or write York Corporation, York, Pennsylvania.

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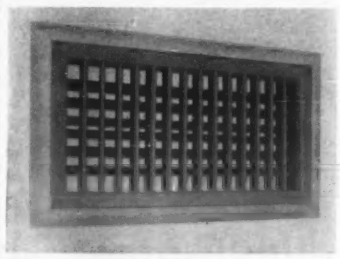


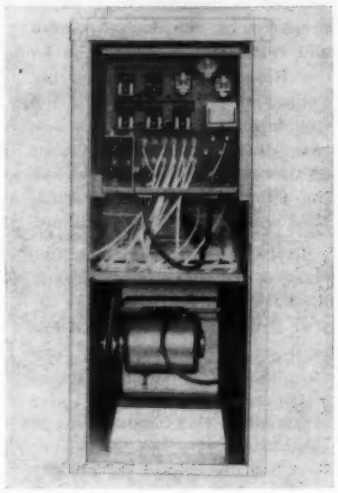
Waterloo Develops New Grille Line

● A new line of grilles featuring removable cores and separable frames, "yet maintaining a free area equal to that of conventional models," has been developed by Waterloo Register Co., Inc., Dept. AH&RN, P. O. Box 72, Waterloo, Iowa.

The company said the grilles occupy no more wall space than conventional types.

"The cores can be removed for cleaning or refinishing without removing the outer frame," it was stated. "This avoids damage to plaster, paint, paper, or other wall decoration. Where a multi-shutter or opposed-blade damper is attached to the grille face, the damper, which is an integral part of the unit, removes easily without disturbing the outer separable frame."

Electric Furnaces Offer Modulated Heat Supply



● Four banks of electrical elements for modulated heat supply in accordance with climatic needs are featured in the new "Supreme" series electric furnaces introduced by the Majestic Co., Inc., Dept. AH&RN, Huntington, Ind.

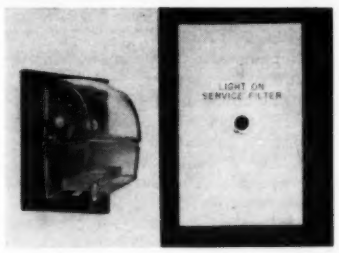
Individual room control for heating, cooling, filtering, and humidification can all be accomplished through the addition of a multi-zoned power damper assembly, evaporator cooling coil, remote condenser, electrostatic filter, and humidifier, it was pointed out.

The new furnaces are made in "large" and "small" cabinet sizes. The "large" downflow unit is 63⅛ in. high and the "large" upflow unit is 48½ in. high. Both are 26½ in. wide and 30 in. in depth. The "small" upflow measures 40 in. in height while the "small" downflow is 55⅛ in. in height. Both are 17 in. wide and 30 in. deep.

Three wattage inputs are possible: 3,000, 5,000, and 6,000 per bank with a B.t.u. range of 41,000 to 82,000. Both large and small cabinet sizes have the same heating capacity. The large size cabinet has a larger blower and motor for greater cooling needs.

Cooling cabinets to be used on both large and small electric furnaces are those listed in Majestic catalogs: the 24,000 B.t.u. cooling coil and cabinet is for the small electric furnace and the 35,000 to 60,000 cooling coil and cabinet is for the large electric unit.

Remote Indicator Shows Need for Filter Change



● "Tattle Tale," a device which attaches to a forced air heating or cooling system to show by means of remote indicator lights when a clogged filter needs either changing or servicing, has been put on the market by Better Engineered Controls, Dept. AH&RN, 1822 So. Burlington Ave., Los Angeles 6.

The Tattle Tale is available in two kits—one for filter change and one for filter service.

The kits give a signal when air filters should be serviced. "As the air filter traps dirt or other air borne material, the increased air flow resistance of the filter results in a reduction in volume of air flowing through the filter and an increase in the pressure differential across the filter," the company explained.

"It also causes an increase in the negative pressure on the downstream side of the filter, with reference to atmosphere pressure. The filter gauge service switch is operated by the pressure increase and is adjusted when installed to signal the need for filter service before filter resistance and reduction in air flow become excessive."

List price is $14.50.

WHAT . . WHEN . . WHERE

— A Guide to Coming Events of Interest

Gas Appliance Manufacturers Association
April 1-3, Americana hotel, Bal Harbour, Fla.

Refrigeration Research Foundation
April 2-5, Statler and Mayflower hotels, Washington, D. C.

Edison Electric Institute
April 5-9, New Orleans.

Mechanical Contractors of America Convention
April 28-May 1, Shoreham hotel, Washington, D. C.

Oil-Heat Institute of America
April 29-May 4, Olympic hotel, Seattle.

Air-Conditioning & Refrigeration Institute
May 3-6, The Homestead, Hot Springs, Va.

Industrial Heating Equipment Association Meeting
May 17-20, The Homestead, Hot Springs, Va.

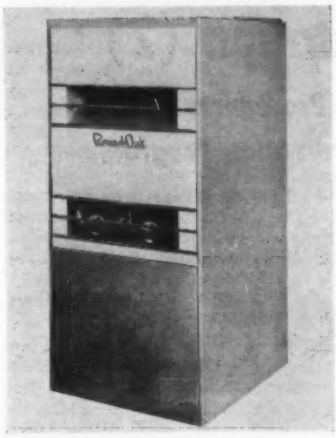
Sheet Metal & Air Conditioning Contractors Annual Convention
May 28-30, Broadmoor hotel, Colorado Springs, Colo.

Institute of Appliance Manufacturers
June 1-3, Netherland-Hilton hotel, Cincinnati.

American Society of Heating, Refrigerating & Air Conditioning Engineers
June 22-24, Lake Placid Club, Lake Placid, N. Y.

ARE you in need of a "just right" man to fill a slot in your organization—the man you are looking for will be reading the

NEWS' CLASSIFIED ADS



Round Oak Furnaces Claim High Air Flow

● Round Oak Co., Inc., Dept. AH&RN, Dowagiac, Mich. announces a new line of gas furnaces designed to handle the high air flow of air conditioning with low gas input.

Named the "Rocket," this new type of furnace is claimed to have the highest blower capacity per B.t.u. input of any furnace in its class. The heat exchanger's contour captures the greatest amount of heat from a low gas input, while it lets a giant-size blower and motor produce huge volumes of air, according to the manufacturer.

Round Oak Circulaire Rocket furnaces are available in seven different sizes, with output ratings from 48,000 to 120,000 B.t.u./hr. Each of the seven basic models is available in highboy models for homes with basements, and in downflow models for homes without basements.

Al-Solder Rod Is for Use on Aluminum

● A new alloy specifically designed for soldering aluminum "easily, efficiently, and economically," the Airco 720 Al-Solder Rod, is now available from Air Reduction Sales Co., a Div. of Air Reduction Co., Inc., Dept. AH&RN, 150 East 42nd St., New York City 17.

Designed for use in a wide range of joining and filling applications, the new rod has the advantage of providing a good color match and is clean to use, requiring no flux, no washing, and no wire brushing, according to the company. Precleaning and post cleaning are said to be unnecessary.

"The new Airco 720 Al-Solder is applied by rubbing across joints which have been heated," it was explained.

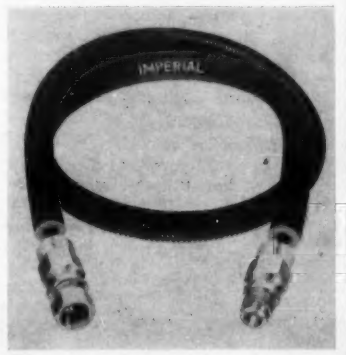
"The flame is not directed on the rod. Melting and wetting takes place 400° to 500° below the melting point of the aluminum at a temperature of 720° F.

"The heating process can be repeated if necessary until the aluminum sections have been brought to temperature."

Al-Solder is particularly suitable for joining aluminum air ducts, according to the manufacturer.

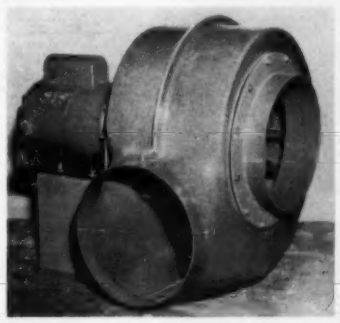
More New Products Shown at ASHAE Show In Philadelphia

Pictures in these two columns are of products shown at the International Heating and Air Conditioning Exposition recently held in Philadelphia. For further information please write the manufacturer. Additional picture coverage of the show appeared in the Feb. 9, Feb. 16, and Feb. 23 issues.



NEW "FREON" hose and reusable couplings for use with pull-out units and automotive air conditioning was featured at the Imperial Brass Mfg. Co. booth.

REDUCED VOLTAGE auto transformer closed transition starter for a Trane CenTraVac air conditioning unit was exhibited by the Square D Co. Top rating is 400 hp. at 440 volts.



NEW ALL RIGID PVC utility blower for use where moisture or corrosive fumes are present was featured at Industrial Plastic Fabricators, Inc. booth. Unit requires no special wheel, paint, or coating.

NEW MIDGET TMC filter drier, claimed to be one-tenth the size of other driers and up to 19 times as efficient was compared with a golf ball for size by Tube Manifold Corp.

Developing Military Standardization (2)

Sterling Smith Outlines Concepts, Principles, Procedures Which May Be Applied In Armed Services' Standardization Programs

Development of a program providing for the standardization for interchangeability, and reducing to a minimum the number of the principal multi-purpose components of military field refrigeration and air conditioning equipment and systems, is a major accomplishment that will be of considerable significance to the industry.

Component interchangeability will lead to the use of more uniform items in systems in this category throughout the Armed Services. The study was conducted under the leadership of the Quartermaster Corps, fully supported and complemented by all elements of the Armed Services and with the fullest cooperation of the industry.

How the Standards were developed is reported in a paper prepared by Sterling F. Smith and released for publication by the Research and Engineering Command of the Office of the Quartermaster General at Natick, Mass. The first instalment of this report was published in the Feb. 23 issue, and the balance will follow in future issues.

Sterling Smith was Wartime chief of the Refrigeration and Air Conditioning Division of the War Production Board, and has been an executive with Kelvinator, Mills Industries, and Baker Refrigeration Corp. As vice president of Consultants, Inc. in Washington, he has served as technical director of the project.

DIRECT EXPANSION AIR CONDITIONING EVAPORATORS

Standardization of this component is in the form of a compilation of engineering design criteria and a mechanical standard by means of which engineers working with identical load factors are enabled to design evaporators which are physically and functionally interchangeable.

The broad range of applications together with the widespread geographical locations where these systems would operate made necessary this type of standardization. These two factors combined imposed a multiplicity of combinations of design conditions which made impossible the development of any reasonable number of standard sizes of air conditioning evaporators.

Functional Characteristics

Standard Air Conditioning Evaporators are rated on the basis of total cooling effect (within specified tolerances) per nominal square foot of face area when operating with 450 f.p.m. face velocity at 40° F. refrigerant temperature with 80° F. db and 67° F. wb recirculating air.

Physical Characteristics

Interchangeability is attained by:

1. Standardizing
   - (a) Face velocity
   - (b) Increments of face width, finned length and mounting bolt hole spacing
   - (c) Size, type, and location of refrigerant connections
2. Limiting
   - (a) Pressure drop from distributor inlet to suction manifold outlet
   - (b) Nominal static pressure drop through the coil
   - (c) Fins per inch
   - (d) Suction superheat

The above itemization does not begin to describe all of the standardization accomplished in this program. For example, while the itemized work was being done under contract, the Quartermaster Corps and other elements of the Department of Defense carried on extensive work in other fields so that there is now only one size warehouse refrigerating unit used in multiples; this may be assembled by using standard interchangeable components.

Previously, even though the "plug" size had been standardized between the services, if there happened to be consistency in the components used by each service in assembling these units, it was almost by happenstance.

There is now one type walk-in refrigerator, 150 cu. ft., and several other examples of dimensional standardization.

In addition there is extensive standardization in accessories: "units" and components which complete the system. It would take pages to describe these items, so we shall try to leave with you only an impression:

Thermostatic Expansion Valves
Liquid Receivers
Liquid-Suction Heat Interchangers
Water Regulating Valves
Suction Pressure Regulators
Evaporator Pressure Regulators
Dehydrators
Strainers
Sight Glasses
Service Valves
Check Valves
Safety Valves
Three-Way Valves
Pressure Gauges
Thermometers—Remote Bulb
Dual Temperature Control
Dual Pressure Control

Let us review briefly the accomplishments of the project to date, for they are worthy of note. The "open-type" compressors have, through standardization, been reduced in number from 39 makes and models to two models which may be produced competitively.

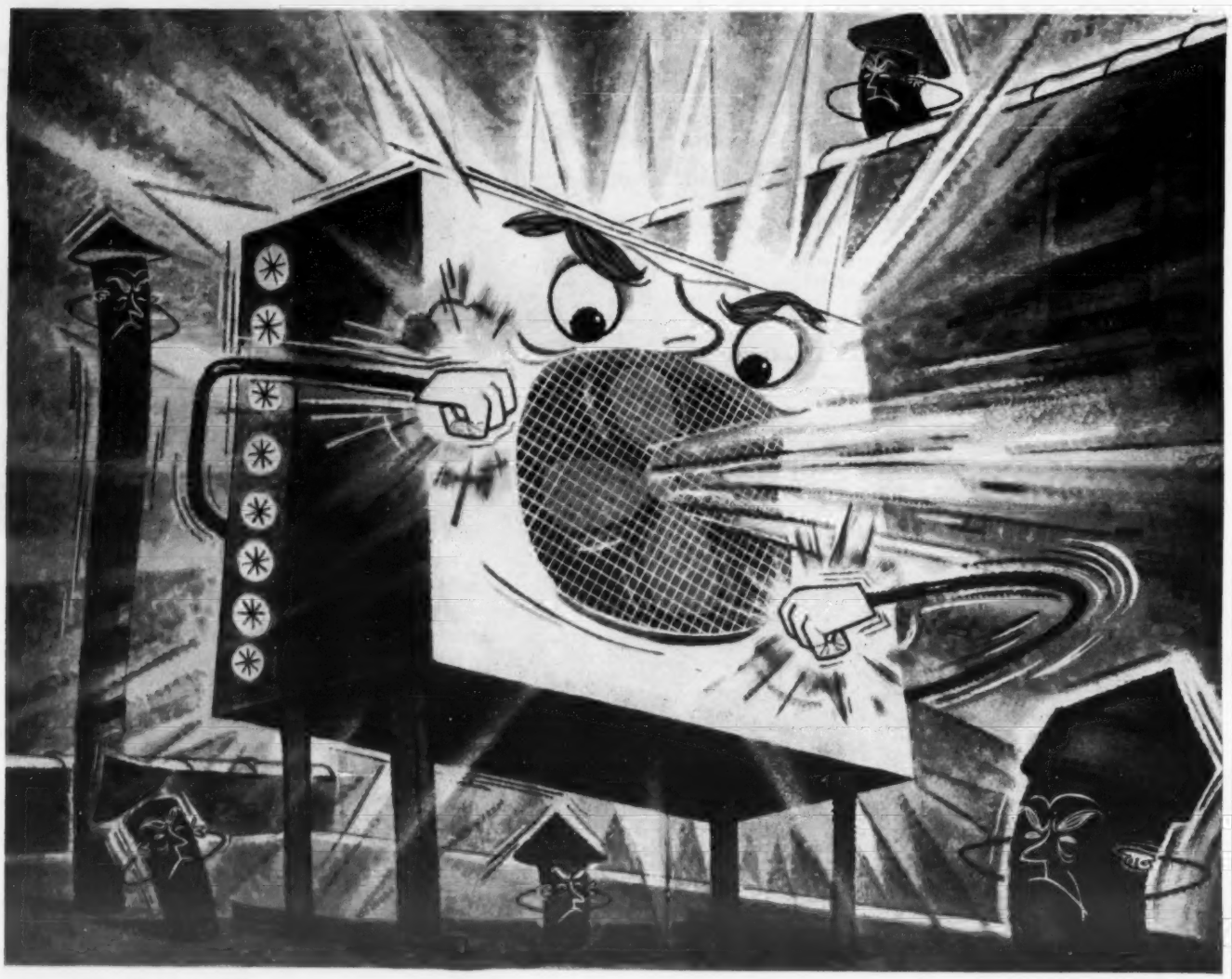
In the hermetic field, the Department of Defense at the time of the initial research into this area was purchasing 157 makes and models in the nominal horsepower range of ½ through 7½. The standard reduces this to eight types and sizes in the same range, which are interchangeable capacity-wise between systems.

Where prior to standardization there was an infinite number (due to the fact that each contractor designed one of each for each procurement) of air-cooled condensers and low and medium temperature evaporators, now four of each serve all essential military requirements.

The design and mechanical standard for air conditioning evaporators makes it possible to interchange these between systems having the same heat load and air quantity.

The planned standardization of accessories will produce equally startling results. For example, there are some 88 thermostatic expansion valves in the supply system at present serving only Quartermaster requirements. This number will be reduced to five, and have enough functional flexibility to cover all requirements within the foreseeable future.

There are more than 20 solenoid valves. This number has been reduced to two sizes and two types. There were 56 dehydrators in the Quartermaster supply system. These have been replaced by two. A similar reduction may be ex-



BEFORE YOU BUY, THINK:

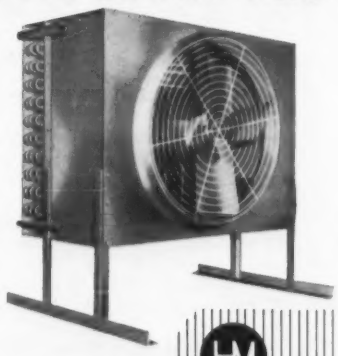
Will your air-cooled condensers sound like thunder?

Not even from close up if they're by Halstead & Mitchell

Fan noise, vibration and rattling have been engineered out of H&M air-cooled condensers. Deep pitch fans are run at slow speeds. Casings are rugged; won't loosen with use.

H&M condensers are completely dependable. The large coil and exclusive Turbu-Flo fins improve heat transfer by up to 15%. Fins are spaced widely to avoid clogging by dirt and other air-borne particles.

Winter operation is easy, too, with H&M's special modulating valve. Halstead & Mitchell air-cooled condensers are available in propeller fan or blower models. Multiple circuiting at no extra cost. Ask your local distributor for complete information, or write to Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.



H&M AIR-COOLED CONDENSER

HM Halstead & Mitchell

Water-Cooled Condensers · Cooling Towers · Air-Cooled Condensers · Finned Coil Products

pected in the other accessory components.

This review of results which have been achieved will enable the reader to comprehend that standardization in this program has proceeded so far that the Army Quartermaster Corps has succeeded in standardizing the type and size of the major components used in assembling complete refrigeration and air conditioning units and systems.

Not only has there been standardization of functional characteristics, but also standardization within dimensional limitations of these items which insures interchangeability between units and systems and also channels technological change and advancement within the standard dimensional limits.

This summary of specific work done accentuates some of the generalized discussion which preceded it. But there are still other general implications with respect to the concepts, principles, and procedures involved.

Insight Into Concept

We can now gain a realistic insight into the concept of System Standardization.

1. All the items of the standardization project, even nuts and bolts, must be considered, **not alone,** but in relation to **the system** or the operating component.

2. There was **no** attempt to arrive at complete, idealized standardization. Broad or key steps must be taken first, but always with the concept of **the system** in mind.

3. Every element of the system through standardization should be made flexible enough to allow for orderly technological advancement.

These concepts were derived from the requirements of law, administrative directive, basic thinking from both the Armed Services and Industry, and from the principles of Military Standardization with which most readers of this paper will be familiar—such as, interchangeability, procurement simplicity (i.e., broadening of the procurement base), ease of storage, economy, technological adaptability, all tied into the fundamental principle that the first aim of the project was to improve the logistical support and combat readiness of our Armed Forces.

In a sense, one might feel that the concepts noted above are trite. Such is not the case. For some time there has been discussion and even strenuous argument as to which comes first—unit or component or system standardization. In any one example, any of the three might be chosen; but in far more situations than is usually recognized, **the system** technique should be applied.

50 Items Reduced to 1

It is perhaps practical within studied limitations to go through the Federal Catalog and throw out cards where duplication is shown to be clearly evident. There are some areas where such theory works. For example, we know of a case where 50 items of the same type, each with a separate stock number, were used during World War II (inevitable because the Armed Services were often taking what they could get, not what they necessarily wanted). After the War, the stock numbers were reduced to 36—but when **the system** approach was utilized, the reduction was to **one.**

We have previously stated that the author has intended to be a reporter and interpreter. Even in such capacity, he would be worse than negligent if he did not point out that there are many, many areas in the over-all standardization program where the possibility of **system** application has not been explored.

The Quartermaster Corps of the United States Army is entitled to immense credit for its imaginative and objective thinking in support of the procedures involved as they were conceived and applied in this refrigeration and air conditioning project.

There are some further implications to be drawn from the foregoing, to be stated briefly here and at more length later in this paper.

The proof of the pudding is in the eating. We have shown a successful record above. Therefore, when we say that written procedure, even though very complex, is necessary, there is clear evidence that such a procedure is not a literary exercise, but a step-by-step engineering approach developed on the basis of work **done;** not theory or merely **imagined.** There are eight phases of the procedure. These will be explained in detail later.

We have previously noted the essentiality of broad cooperation and coordination. Obviously, this must come first from within the Armed Services. Not so obvious but just as true in a complex situation, industry cooperation is vital.

We have said that the imagination, objectivity and support of the Quartermaster Corps, backed up by the other Services, was the initial requirement, but we are positive that The Quartermaster General would say that the industry did play an indispensable role. In fact, it may be said that Industry expenditures in time and money have matched that of the Department of Defense on this project.

It must be remembered that in commercial competition, it is frequently the "difference" which sells a product, and a competitor will think twice or thrice before he gives up that "difference" to the ideal of standardization. This is not "selfish" because it is competition on the "difference" which is part of the engine of our competitive system.

In passing, it should be remarked that there has been an enormous amount of standardization in private industry—electric motors, television tube dimension, light bulb sockets, and thousands of other items.

To some extent, a skeptical attitude will be found in business when it deals with government—that is, if the competitor can main his "difference" that government will be under some compulsion to buy from him.

In the present project there was little or no such attitude. Had there been, the kind of success which was achieved would have been impossible.

The stability of standards makes it somewhat easier and safer for a new competitor to enter the field and this new producer will thus broaden the procurement base.

The Industry, in this case, was farsighted, indeed, to understand that the complexity of the military situation and its great cost would eventually make standardization a necessity if the economy was to continue to be able to bear the burden. There will now be more utilization of the equipment here involved at a lower total cost than before standardization.

It may seem immodest to discuss the function of the private contractor in an enterprise such as this. But in the interest of completion of our discussion of basic points, we feel that this function should receive attention.

First, we hold no brief whatsoever for the private contractor. He may be employed for several reasons—technical skills not available in the Defense agency involved, pressure of engineering manpower shortage, pressure of other work, need for full-time effort and direction on a project, and, lastly, because there is virtue in the objectivity which the trained personnel of the consultant engineering firm can bring to the task.

There is need for a neutral third party in many projects. **If the private contractor does not meet at least one of the above criteria in an important way, he should not be employed except in special cases not here envisaged.** There is assuredly more than enough ability in the Armed Services **if it can, as it should, be utilized full-time, which concentrated and continuous attention we believe to be essential in a complex project.**

(To Be Continued)

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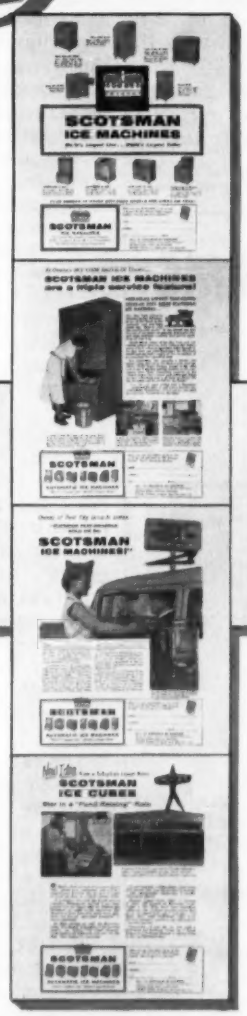

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Air Distribution Requirements In Year-Round Air Conditioning

By Frank D. Klein, Chief Engineer, Governair Corp.

Selection or Rechecking Application of Proper Water-Cooled Condenser

Because the continued rate of water flow is paramount to the continued efficiency of the shell and tube type condenser, the "fouling factor" referred to previously is important. This fouling factor has to do with the water side coefficient for heat transfer.

Manufacturers formerly rated their equipment on a so-called "commercially clean" basis, which in the final analysis became somewhat confusing. Some rated on the basis of newly-manufactured equipment; others rated on the basis of equipment which had been in service, but which had been cleaned by "acidizing" or other methods for removing foreign deposits on the water side.

Of late it is common practice among most manufacturers to establish ratings at some point of normal balance where tests and field observation have revealed characteristics of contamination by fouling consistent with the type of system in which the condenser is employed.

Because, for the purpose here, consideration is given only to condensers having non-ferrous tubes, the following tables outline some typical fouling factors common in calculating heat transfer coefficients on the water side. Specifically, condensers fouled beyond those factors will cease to perform at their rated capacity as shown in the table. (See Table 1.)

Table 1

Type of Service	Fouling Factor
Non-Inhibited Salt Brines	0.001
Inhibited Salt Brines	0.0005
Solvent Brines	0.0
Recirculated Water, closed system	0.0005
Recirculated Water, open system	0.001
Non-Recirculated Water	0.005*

*These will increase depending on the water source. See following table.

(Courtesy ASRE Data Book.)

Table 2—Typical Fouling Factors for Various Water Sources

Water Source	Water Velocity: 3-FPS or Less	Water Velocity: Over 3-FPS
Brackish Water	0.002	0.001
Cooling Tower Water, Treated Make-Up	0.001	0.001
Untreated Water	0.003	0.003
City, Well, or Fresh Lake Water	0.001	0.001
Average River Water	0.003	0.002
Drainage or Dirt Pond Water	0.003	0.002
Industrial Canal Water	0.008	0.006
Hard Water (over 15 gr./gal.)	0.003	0.003
Recirculated Engine Jacket Water	0.001	0.001
Sea Water	0.0005	0.0005

(Courtesy ASRE Data Book and amended with extensions.)

Each manufacturer publishes his ratings at some particular fouling; it is impractical to apply condensers at factors other than, or under conditions other than, those recommended. Capacities, as previously stated, progressively decrease in shell and tube type condensers as the condition of fouling increases on the water side.

It should be said here that the manufacturer's ratings, predicated on his established fouling factor, are always contingent on the use of normal and practical maintenance.

When water conditions indicate fouling on the water side may be encountered in excess of that used by the manufacturer in rating his condenser, calculation for application should be made on a higher factor as indicated in the following table, based on the water velocity to be employed. (See Table 2.)

Typical of manufacturers' ratings are those, including calculations for application, published by the Bell & Gossett Co. of Morton Grove, Ill. for its Series "RCF" Hydro-Flo shell and tube condensers.

Because manufacturers continue to combat disservice factors by continual improvement in design efficiency, each should be assessed on the basis of each design.

The B & G line of condensers is rated on the basis of 15,000 B.t.u./hr. heat rejection per ton of net refrigeration effect, with a fouling factor of 0.001. With this as a basis, typical selection, or recalculation in application is made as follows.

PROBLEM: The system has been calculated to involve a heat rejection of 563,000 B.t.u./hr. The application is made on the basis of a condensing temperature of 104° F. with 85° F. water being circulated at the rate of 113 g.p.m.

SOLUTION: **To determine the net refrigeration required or potential:**

(a) Divide the total heat rejection by the basic rating of 15,000 B.t.u./hr.
563,000 by 15,000 = 37.533 Tons or 37.6 Tons.

To qualify the water circulation in g.p.m. required per ton:

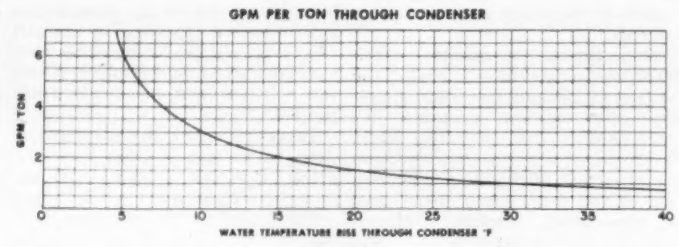


FIGURE 57

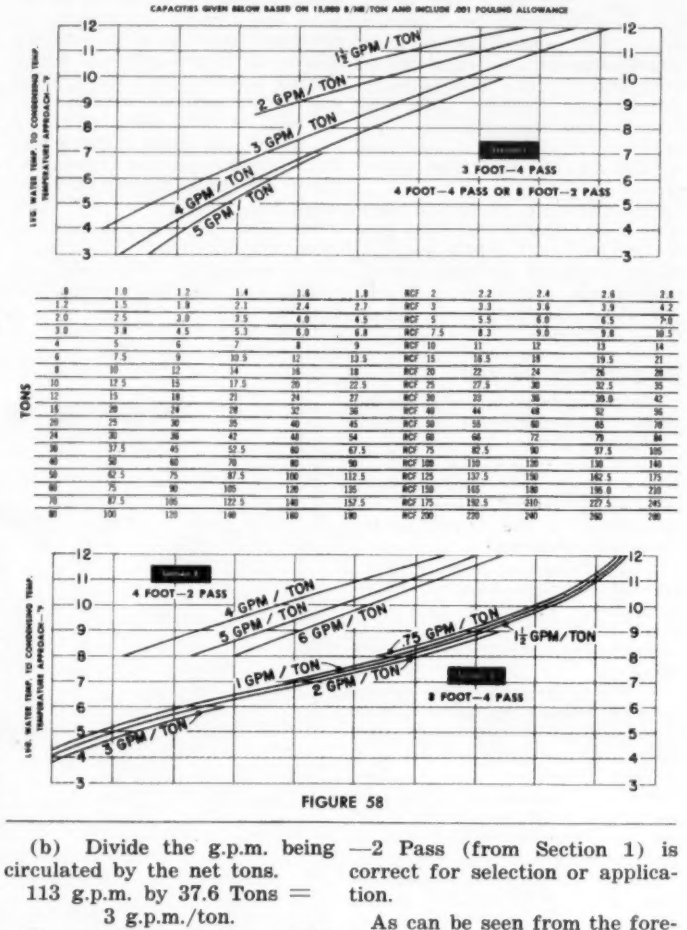

CAPACITIES GIVEN BELOW BASED ON 15,000 B.T.U./TON AND INCLUDE .001 FOULING ALLOWANCE
LVG. WATER TEMP. TO CONDENSING TEMP. TEMPERATURE APPROACH °F
1½ GPM / TON
2 GPM / TON
3 GPM / TON
4 GPM / TON
5 GPM / TON
3 FOOT—4 PASS
4 FOOT—4 PASS OR 8 FOOT—2 PASS
TONS
4 FOOT—2 PASS
4 GPM / TON
5 GPM / TON
6 GPM / TON
.75 GPM / TON
1½ GPM/TON
1 GPM / TON
2 GPM / TON
3 GPM / TON
8 FOOT—4 PASS

FIGURE 58

(b) Divide the g.p.m. being circulated by the net tons.
113 g.p.m. by 37.6 Tons = 3 g.p.m./ton.

To qualify entering water temperature to leaving water temperature:

(c) Use curve in Fig. 57. Note that, at 3 g.p.m./ton the temperature rise is 10° F. Thus 85° entering water plus 10° rise is 95° F. leaving water.

To qualify the "approach" or the difference between the leaving water temperature and the condensing temperature:

(d) 104° F. minus 95° F. = 9° F. approach.

To determine suitability of condenser model to capacity required:

(e) Refer to Fig. 58 and enter Section 1 at the 9° F. approach figure. Move horizontally to the 3 g.p.m. figure. From the point where it intersects the approach line, drop down vertically to the Tonnage Section between Sections 1 and 2. Stop at the horizontal line approximating the "nominal" tonnage, which is closer to 36 tons than to 30 tons, 27 tons, or 45 tons. Read horizontally to the right and we find that a model RCF-40, either 3 ft. long—4 Pass, 4 ft. long—4 Pass, or 8 ft. long —2 Pass (from Section 1) is correct for selection or application.

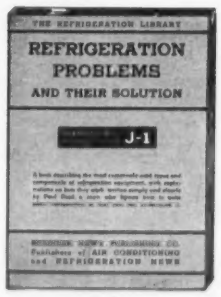
As can be seen from the foregoing, rated and potential capacities, while based, of course, on other factors, are highly dependent on maintenance of water flow rate. Variation in flow rate as influenced by variation away from rated fouling factors leads to variation in capacity, for "these factors are the reciprocal of the heat transfer rate, established as a coefficient, of the layer of foreign substances deposited on the surface of the heat transfer tubing." It enters into the equation for calculation given in the previous text.

(To Be Continued)

REFRIGERATION PROBLEMS

AND THEIR SOLUTION

by PAUL REED



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Stop Harassing Burt--

(Concluded from Page 1, Col. 3)

ployer or any employes of such employer to refuse to handle or install the products of Burt, or by inducing their own members or any other locals of the International to refuse to handle or install the products of Burt."

At the same time, Scharnikow recommends dismissal of the allegations of the complaint in the case that the unions committed unfair labor practice within the meaning of Section 8 (b) (4) (B) and (C) and 8 (b) (2) of the National Labor Relations Act, or any unfair labor practices other than those found.

Hearing on the complaint was held in Cleveland from April 21 to May 9, 1958.

The Sheet Metal Workers union is expected to file an exception to the trial examiner's recommended order.

The case grew out of a long-standing jurisdictional dispute between the Sheet Metal Workers and the United Steel Workers, both AFL-CIO affiliates. Burt Mfg. claims the dispute had cost it millions of dollars in lost business. The company makes ventilating equipment.

According to the NLRB, the boycott against Burt, whose employes are represented by the Steelworkers, has been going on since 1945. The Sheet Metal Workers union claims jurisdiction of both manufacturing employes and employes in the building industry engaged in installing ventilating equipment.

The complaint alleged that the Sheet Metal Workers union restrained and coerced Burt employes in an effort to force them to change unions. The alleged coercion included threats to strike installation companies who undertook to install Burt products.

Last year, the AFL-CIO directed the Sheet Metal Workers to cease any actions designed to impair the collective bargaining relationship between Burt and the Steelworkers.

Sheet Metal Workers--

(Concluded from Page 1, Col. 3)

10, 1958 issue of the NEWS.

As noted then, the union was accused of attempting "to drive a coercive wedge between the association and the employers it represents with the object of compelling the employers to abandon the association as their collective bargaining representative and substitute individual for group bargaining."

Marx' report indicated that the business agent of the union had refused to renegotiate the 1957 contract with the association but was willing to negotiate with the members individually.

To this end, it was said, he advised the association that the contract would terminate on March 31, 1958 and on April 1 called union members out on strike. A temporary restraining order against the union brought the men back to work a month later.

Carrier Dividends--

(Concluded from Page 1, Col. 4)

rest devoted to working capital and plant modernization. Carrier is currently paying a quarterly dividend of 40 cents a share, having cut it last July.

Answering criticism of stock options by one stockholder, Wampler defended them and pointing out that some of Carrier's options were issued to younger officers, at prices higher than those on options held by senior officers, proposed establishing a single price. This was overwhelmingly approved.

Council Appoints Robert J. Henderson

FORT SMITH, Ark.—Robert J. Henderson, a veteran of 33 years in the commercial refrigeration field, has been named chief of product development at Council Mfg. Co. here.

Henderson is in charge of engineering for the manufacture of the recently introduced Council "Icemaker." He is also supervising development of several models of Council "Drinkmakers" soon to be unveiled.

York Names--

(Concluded from Page 1, Col. 3)

for mobile refrigerated products and automotive air conditioning compressors was in line with renewed emphasis the company is placing on these lines.

"An entirely new line of truck refrigeration units is now ready for introduction to central distributors," Rising stated. "This will open up new fields of activity for York in mobile refrigeration and provide a tie-in with sales to other original equipment manufacturers."

'Workshop'--

(Concluded from Page 1, Col. 5)

2 p.m. on March 13. Presentations at this session include:

"Developments in the Application of the Air Curtain in Refrigeration and Air Conditioning," by Edward W. Simons, consulting engineer, and past president of ASRE.

"The Thermal Electric Heat Pump and Its Applications," by M. B. Grier, senior engineer, Nortronics Div., Northrop Corp.

The second technical session at 10 a.m., Saturday, March 14, will be presided over by D. D. Wile, second vice president, ASHRAE. The program includes:

"Practical Evaluation of Design Features in Modern Compressors," by Joseph Raufeisen, chief engineer, Refrigeration Div., Bell & Gossett Co.

"New Answers To Lubrication Problems on Refrigerant-12 and Refrigerant-22 Systems."

Speaker at the luncheon on March 14 will be Harold P. Hayes, dean of engineering, California State Polytechnic college. The workshop meeting on Saturday afternoon will have Charles L. Hall, regional director of the society, presiding.

Social program includes a cocktail party and dinner dance on Friday night, March 13, and the previously mentioned welcome luncheon on Friday noon.

Peter H. Askew is chairman of the committee handling arrangements for the meeting, and other members are: James Bergman, James Crawford, Richard Dawson, Arthur J. Hess, William Keichline, Mel Kodmur, Gilbert Lord, Kenneth N. Robertson, and Gene Smith.

Acme Electric Re-Aligns Sales Posts

CUBA, N. Y.—C. L. Fiegel has been recalled to the main office of Acme Electric Corp. here where he will take over the new post of eastern sales manager.

In the same re-alignment, Ken Burton, who has assisted Jack Hall as sales manager, returns to the West Coast plant as western sales manager.

Fiegel has been with Acme Electric for 13 years, during which time he has held in-plant sales and service positions, and has represented the company in the field. Burton has been with the firm four years.

Pollux BTU Liquid Meters--

(Concluded from Page 1, Col. 5)

perature differential between the supply and return lines, and if required, the total amount of water circulated, are recorded.

A mechanical device, the Pollux meter consists of a liquid meter, an integrator, and two temperature sensing bulbs. One bulb is placed in the supply line and the other in the return line. The difference in water temperature between the supply and return lines is multiplied by the integrator with the flow of water which has been converted to net weight.

The result in B.t.u. is shown cumulatively on a digital counter on the face of the meter. In addition to the total B.t.u., instantaneous temperature difference is indicated and if required, the gallons of water are shown cumulatively.

At the Pewaukee high school, a 4-in. high temperature liquid meter will be installed. The normal operating pressure is 60 p.s.i.g. The maximum operating temperature is 250°.

A 2-in. chilled water liquid meter will be installed at the University of Arizona. The normal operating pressure is 45 p.s.i.g. The chilled water is operated at a temperature differential between 45-55°.

For the system at Whitewater high school, a 3-in. high temperature liquid meter has been ordered. The normal operating pressure is 100 p.s.i.g. The maximum operating temperature is 310°.

The Pollux meters are helpful in disclosing trouble, it is stated. If the temperature difference indicator registers too low, say 5°, on the chilled water lines, the engineer knows that the velocity through the coils is too high, or the automatic regulating valves are not performing correctly, or are jammed open. This can be corrected manually or by resetting the automatic controls.

If the temperature difference is too high, 20-35°, this indicates to the engineer the velocity of the water is too low through the coils, the strainers or coils are plugged, or that all automatic regulating valves are jammed closed.

AGC Views on Bid Depositories--

(Concluded from Page 1, Col. 2)

ated with bid depositories."

The committee had this to say on local bidding practices boards:

"A report was submitted that there are 16 areas now utilizing a voluntary system to request subcontractors and material dealers to submit proposals to the general contractor within a pre-set period to time (usually four hours) prior to the prime bid opening.

"From reports submitted it was indicated that these programs are successful and have greatly assisted and facilitated bidding procedures in the areas where they are in effect. Five other chapters are presently studying the possibility of establishing a similar system in their respective areas."

Responsibility under the single contract system was one of the topics discussed in the report of the Council of Mechanical Specialty Contracting Industries-AGC Joint Cooperative Committee. On this subject, the report stated:

"It was pointed out during committee discussion that one of the major responsibilities of the general contractor under the single contract method of construction is prompt and proportionate payments to sub and specialty contractors.

"General contractors should make every effort to see that payments to a subcontractor are not withheld for causes not the fault of the subcontractor, but based on the work or materials as far as executed and fixed in place by the subcontractor, less any retained percentage."

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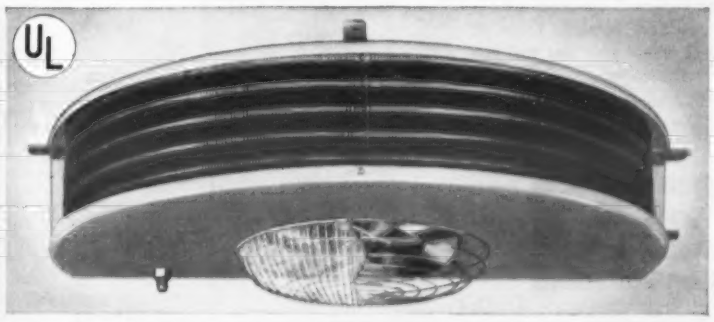

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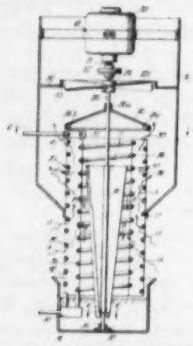
PATENTS

Week of Nov. 11 (Concluded)

2,859,946. HEAT EXCHANGE DEVICE. John R. Boyle and John R. Boyle, Jr., Chicago, Ill.



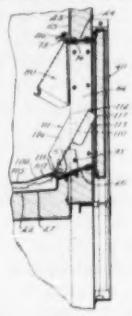
11. In a heat exchange device the combination of a cooling coil, a water tank below said coil, a motor driven shaft extending downwardly through said cooling coil into said tank, a fan on the upper portion of said shaft for inducing an upward flow of air through said coil, a spinner in the lower portion of said shaft comprising vanes operative to lift the water centrifugally from said tank and to spray it on said coil, and a combined air baffle and hydraulic balancing device on said shaft between the upper end of said coil and said fan. . . .

2,860,027. STORAGE BIN FOR ICE CUBE MAKING MACHINE. Donald F. Swanson and Edmund J. Buzicky, St. Paul, Minn., assignors, by mesne assignments, to Whirlpool Corp., St. Joseph, Mich.

1. An ice cube machine including an ice cube compartment, said compartment having an opening in a side wall

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

thereof, a door, means slidably supporting said door for vertical move-

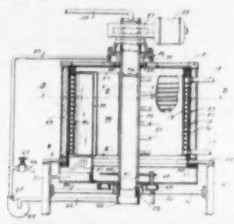


ment from a position closing said opening to a position substantially beneath said opening. . . .

Week of Nov. 18

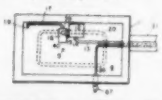
2,860,490. METHOD AND APPARATUS FOR PRODUCTION OF SUPER-COOLED ICE. William H. Taylor, Chicago, Ill., assignor to The Vilter Mfg. Co.

1. A method of ice chip manufacture which comprises spraying a super cooled refrigerated surface with a finely atomized chilled liquid to form increments of ice, flowing unatomized liquid at a temperature too high for freezing over the ice so formed to wash the ice free of impurities, at the same time chilling the unatomized liquid by its traverse of the ice, discharging a portion of the unatomized liquid sufficient to maintain at a low level the concentration of impurities therein, and taking the liquid to be atomized



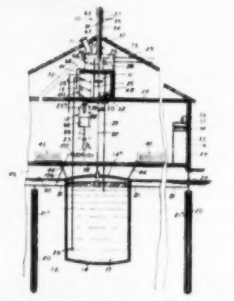
as aforesaid from a remaining portion of such unatomized liquid after said remaining portion has been reduced to temperatures close to its freezing point.

2,860,492. BEVERAGE COOLING DEVICE. Thomas L. Kuebler and Carl J. Schmock, Erie, Pa., assignor to Uniflow Mfg. Co., Erie, Pa.



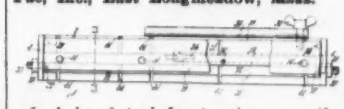
1. A beverage cooling device comprising a cooling unit containing a refrigerated compartment, a conduit, a beverage pipe, a pump, a temperature responsive valve, a liquid, said beverage pipe passing through said conduit, means connecting said pump in flow relationship to said conduit, said pump circulating said liquid through said connecting means and said conduit, means connecting said valve in the path of said flow of said liquid. . . .

2,860,493. HEAT-PUMP APPARATUS FOR PROVIDING HEAT FOR DOMESTIC AND LIKE PURPOSES. Martin William Richard Capps, Nina Constance Capps, and Arthur William Francis Capps, Edgcumbe, Crowthorne, England.



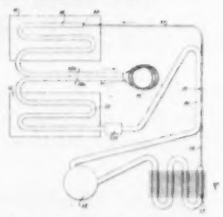
1. A heating system for supplying the requirement of heat for domestic and like purposes, such as that required for space-heating and the like, in which such heat is derived from the atmosphere, said system embodying a single working fluid circuit employing water and its vapor as the working medium and operating on an evaporating and condensing cycle at subatmospheric pressure: the system comprising an atmospheric evaporator; means supplying water to said evaporator wherein the water is vaporized. . . .

2,860,536. HAND OPERATED TOOL FOR FORMING LIP ON END OF A WALL OF A DUCT. Russell F. Swett, Longmeadow, Mass., assignor to Duc-Pac, Inc., East Longmeadow, Mass.



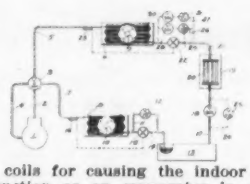
1. A hand tool for turning over the end of the wall of a sheet metal duct section to form a lip, an elongated frame having opposite ends, an elongated former having opposite ends swingably connected to said opposite ends of the frame for swinging between a position to receive the end of a duct wall and a lip forming position. . . .

2,860,494. MULTIPLE TEMPERATURE REFRIGERATION SYSTEM. Harry A. Whitesel, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa.



7. A dual temperature refrigeration system comprising a first high temperature high pressure section and a second low temperature low pressure section, a fixed restrictor connecting the outlet of said first section to the inlet of said second section, the outlet portion of said first section having heat transfer connection for a substantial extent to the inlet portion of said second section effective for liquefying gaseous refrigerant in said first section in advance of said restrictor. . . .

2,860,491. REVERSIBLE AIR CONDITIONING SYSTEM WITH HOT GAS DEFROSTING MEANS. David Goldenberg, Trenton, N. J., assignor to Kramer Trenton Co., Trenton, N. J.



1. A system of the character described including a refrigerant compressor having its discharge and intake connected by conduits with indoor and outdoor coils or the like, said system comprising, reversible refrigerant flow controlling means positioned in the conduits between the compressor and the indoor and outdoor coils for causing the indoor coil to function as an evaporator in cooling cycles of the system. . . .

(To Be Continued)

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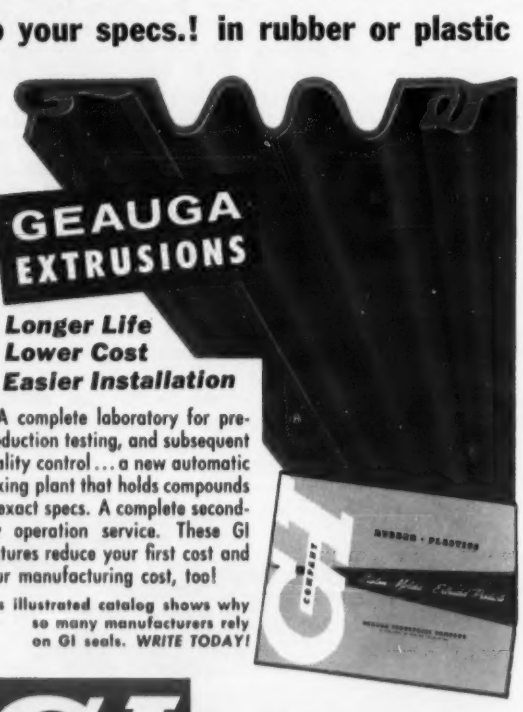

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WANTED, ADDITIONAL lines of equipment—Coils—air conditioners, refrigeration equipment, grills, compressors, condensers etc. As manufacturer's representative in western Michigan. Now have unit heaters, gas conversion burners, small boilers. Two representatives, both men with years experience in air-conditioning and refrigeration with major manufacturer. WILMOT'S, 1067 Bridge St., N. W., Grand Rapids 4, Michigan.

REFRIGERATION SERVICE engineer with twenty years' experience in commercial refrigeration, installation and service. Also air conditioning. Graduate of a technical school. Presently employed as a maintenance engineer for a wholesale frozen food dealer. Desire to re-locate. BOX A6198, Air Conditioning, Heating & Refrigeration News.

WANTED ADDITIONAL lines. Three man organization covering New Jersey nearby Southern New York State. Presently handling air conditioning, heating, blowers, refrigeration, etc. Extensive background with major air conditioning and heating manufacturers. Interested in expanding above lines or adding top quality fast moving allied products. BOX A6199, Air Conditioning, Heating & Refrigeration News.

REFRIGERATION SERVICE technician. 1955 graduate of 2 year technical school. 29 years old. Married. Presently employed as serviceman on domestic, commercial and air conditioning. Desirous of obtaining position with chance for advancement. Willing to do service, maintenance or selling. Must be steady year around work. Presently living in Ohio. Will relocate. Reply BOX A6200, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

MAINTENANCE & installation supervisor qualified by education and experience to supervise refrigeration, mechanical, general maintenance, market installations and construction detail for independent supermarket chain. Should have engineering education plus experience in above lines. Salary commensurate with qualifications. Write giving full information including past earnings and general salary expectations to GENETTI'S SAV-WAY MARKETS, Hazleton, Pennsylvania.

WE NEED the full time services of a capable experienced take-off man and cost estimator for a complete line of air conditioning, heating and ventilation products. Prefer mature middle aged man with background of cost estimating in mechanical contractor's office. If interested, write McMURRY & CO. OF MIAMI, 33 N. E. 6th Street, Miami, Florida with full details, qualifications and personal data. Salary open.

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MANUFACTURER'S AGENTS for a complete line of air and water-cooled central air conditioning equipment, both commercial and residential. Desire agents already established in heating and air conditioning, calling on wholesalers and OEM accounts. Give details in first letter stating area covered and other lines handled. BOX A6177, Air Conditioning, Heating & Refrigeration News.

ENGINEER REFRIGERATION Controls—To head a department on design and development of commercial refrigeration control valves of all types; national corporation with midwestern manufacturing and engineering facility; salary and bonus commensurate with work background and ability. Send full details, qualifications and personal data, to BOX A6172, Air Conditioning, Heating & Refrigeration News.

DEVELOPMENT ENGINEER. Attractive position open for experienced engineer of residential split systems, package units and/or heat pumps. Also interested in engineer experienced in design of commercial air cooled air conditioning equipment. All replies given prompt, confidential attention. Salary open; location, Michigan. Reply BOX A6201, Air Conditioning, Heating & Refrigeration News.

WANTED—SERVICE mechanic—Must know refrigeration and heating, knowledge of controls helpful. This is your opportunity to work for a company specializing in preventative maintenance. No layoffs. In reply give complete work resume, training, and personal data. Write BOX A6202, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER—college degree in air conditioning and refrigeration, between 30 and 40 years of age, who has had experience calling on contractors and engineers. Growing midwest manufacturer of compressors, condensing units, full line of chillers 10 to 300 tons, and cooling towers. Duties require working with manufacturers' agents who sell direct to all contractors, requiring substantial travel. Give full details of education, experience, jobs held with salaries-references, minimum salary required in letter of application to BOX A6203, Air Conditioning, Heating & Refrigeration News.

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WANTED SURPLUS condensing units with or without motors. Preference given Frigidaire compressors. SOUTH TOWN REFRIGERATION CORP., 8041 South Western Avenue, Chicago 20, Illinois or Phone Prospect 8-1000.

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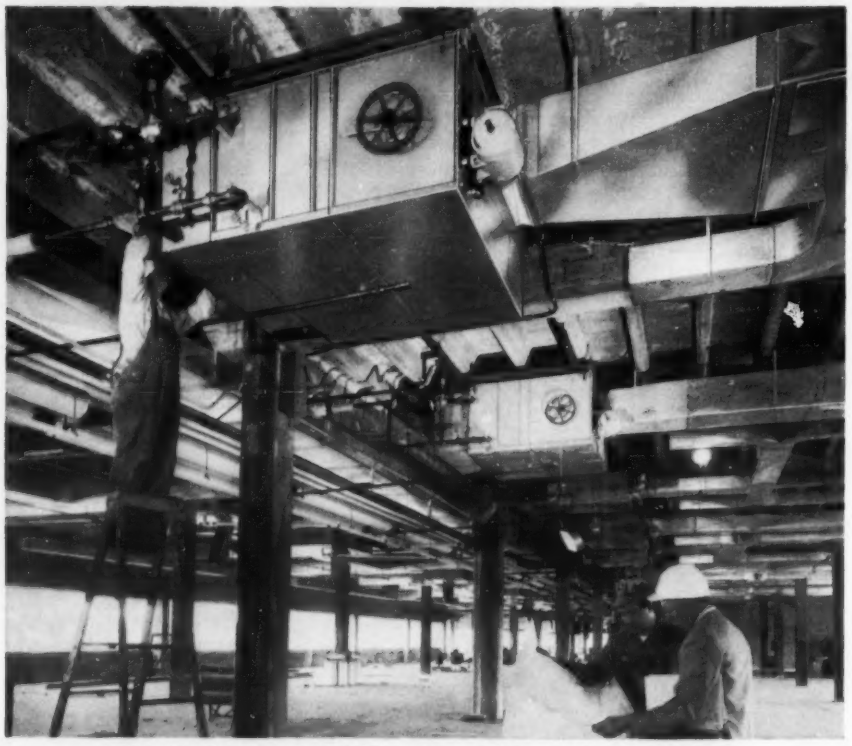

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